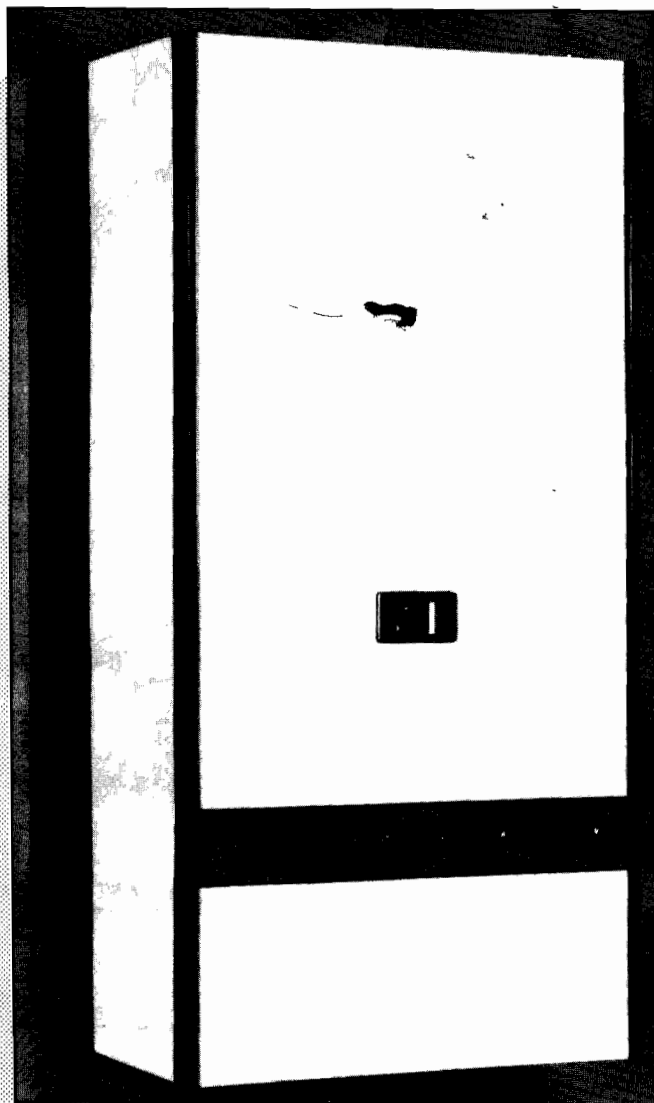


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# Installation and Servicing Instructions



**e.i.m. leblanc**

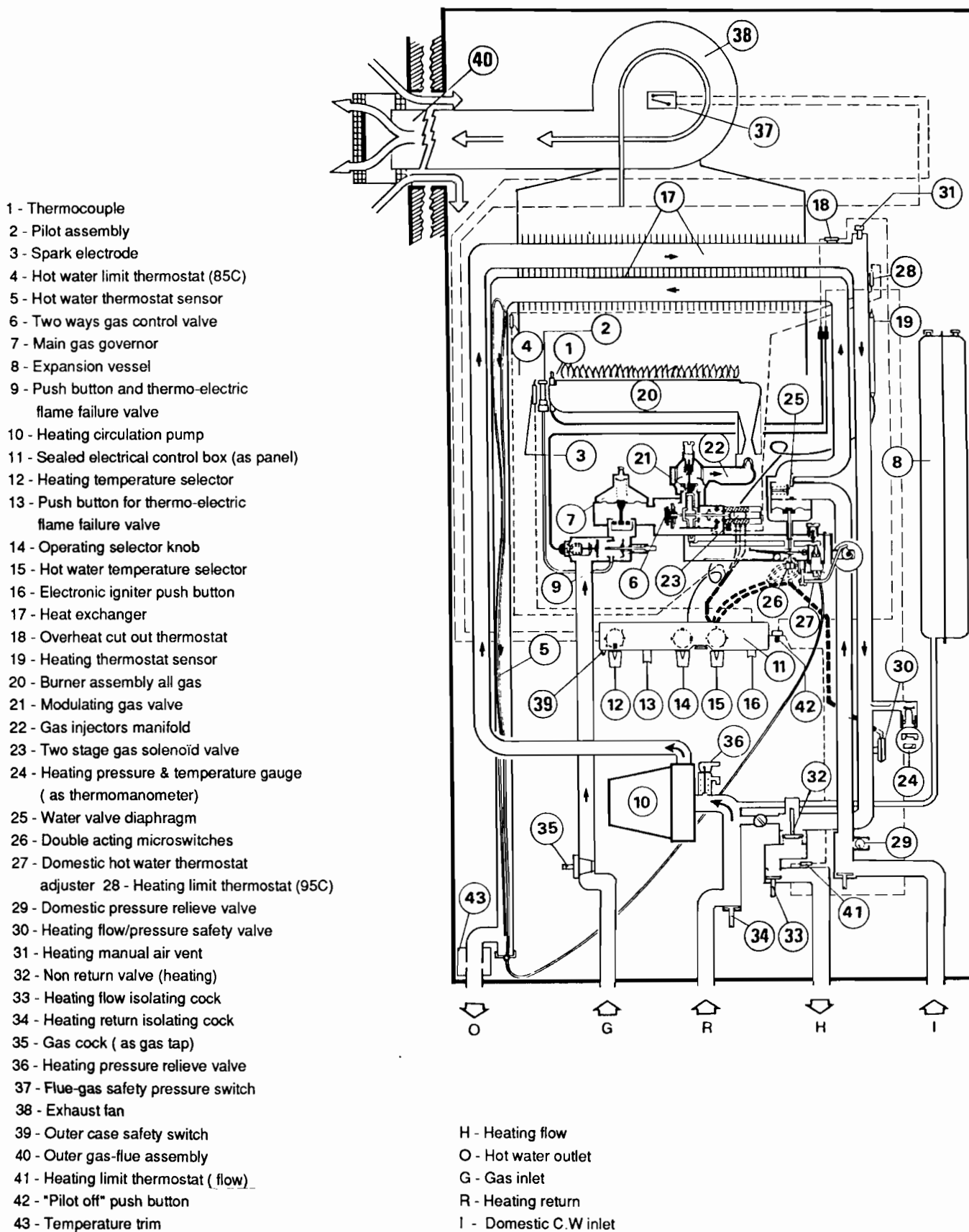
**type GVM 5.20**

**Fan assisted Wall-Mounted  
Combination Gas Boiler  
FOR NATURAL GAS ONLY**

British gas tested and certified  
G.C. APPLIANCE Nr. 47.241.04

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**NOTE TO INSTALLER : LEAVE THESE INSTRUCTIONS ADJACENT TO THE GAS METER**

**DIAGRAMATIC LAYOUT ONLY**

(For pipe connections see installation part)

## INTRODUCTION

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The GVM 5.20 is a wall-mounted, low water content, balanced flue, fan assisted combination boiler with two separated heat circuits. The central heating circuit is range-rated between 8.7 kW (30,000 Btu/h) minimum to 23.2 kW (79,400 Btu/h) maximum output and has an ON-OFF burner switching action, controlled internally by built-in sensing thermostats and externally by a room thermostat and time clock (if required). The domestic hot water circuit has a modulated gas supply to the burner - this matches the heat output to suit the water flow between 6.3 kW (21,500 Btu/h) minimum to 23.2 kW (79,500 Btu/h) maximum hence there is no need for any additional external water flow reducer.

**NOTE :** It may still be necessary to fit a pressure reduction valve in accordance with water regulations in some site conditions (see page 7 hard water areas).

The boiler is supplied in one pack contained the main boiler assembly, incorporating the dual heat exchangers, burner assembly, gas and water controls, the expansion vessel, the pressure relief valve and the fan. The balanced-flue assembly is packed in the base of the carton inside the foam plastic block. The boiler may be set to give central heating and hot water or hot water only from the front panel controls, adjusted to the range of temperatures shown in table 1. It may also be fitted with an external room thermostat and time switch in accordance with the wiring diagram shown page 13. The boiler casing is of white enamelled mild steel and contains the operating controls, including a pressure temperature gauge and a centre viewing port to examine the pilot flame condition.

THIS BOILER IS DESIGNED FOR USE WITH FULLY-PUMPED, SEALED WATER SYSTEMS ONLY

## GENERAL INSTALLATION REQUIREMENTS

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This appliance must be installed in accordance with the following Statutory Regulations and British Standards Codes of Practice :

Building Regulations (England and Wales). The Buildings Standards (Scotland) Regulations. Gas Safety (Installation and Use) Regulations 1984. Current I.E.E. Wiring Regulations and Local Water Authority By-Laws.

### Codes of Practice

- |           |   |
|-----------|---|
| BS.6891   | - Installation of low pressure gas pipework.  |
| BS.6798   | - Installation of gas fired hot water boilers of a rated input not exceeding 60 kW.               |
| BS.5449:1 | - Forced circulation hot water systems (domestic central heating system smallbore and microbore). |
| BS.5546   | - Installation of gas hot water supplies for domestic purposes (2nd family gases).                |
| BS.5440:1 | - Flues (for gas appliances of rated input not exceeding 60 kW).                                  |
| BS.5440:2 | - Air supply (for gas appliances of rated input not exceeding 60 kW)                              |

### Gas Safety (Installation and Use) Regulations 1984

It is the law that all gas appliances are installed by a competent person (e.g.) Corgi, identified by in accordance with the above Regulations.



Failure to install appliances correctly could lead to prosecution. It is in your own interest, and that of safety, to ensure that the law is complied with.

### **IMPORTANT :**

This appliance is tested and certificated by British Gas plc for safety and performance. No external devices, e.g. flue dampers, economisers, can be fitted.

TABLE 1 - PERFORMANCE DATA

Central heating	Maximum		Medium	Minimum
Heat input (gas)	kW Btu/h	28.6 97700	18.42 62800	12.0 40950
Heat output water	kW Btu/h	23.2 79200	14.0 47800	8.7 29700
Preset heating adjustment	kW Btu/h		14.0 47800	
Burner setting pressure (hot)	mbar in wg	11.8 4.7	4.3 1.72	1.3 0.58
Gas rate	m <sup>3</sup> /h ft <sup>3</sup> /h	2.7 94.10		0.9 32.0
C.H. water temperature (approx.)	°C °F	82 180		30 86

&gt; T at 80°C flow temperature : 20°C

Domestic hot water	Maximum		Medium	Minimum
Heat input modulation (gas)	kW Btu/h	28.6 97700		12.0 40950
Output water (modulating)	kW Btu/h	23.2 79400		6.3 21500
Flow rate at 50°C rise	l/min G.P.M.	6.6 1.4		
Outlet water temperature	°C °F	65 150		

## GENERAL DATA

Main Burner Assembly	18 x bars
Gas/Water Control (monobloc)	elm leblanc
Burners Injectors Nat Gas	elm leblanc Ø 1,20 mm
Pilot Injector Nat Gas	elm leblanc Ø 0,30 mm
Gas Inlet Connection	Ø 22 mm copper
Inlet Connection D.H.W	Ø 15 mm copper
Outlet Connection D.H.W	Ø 15 mm copper
Flow Connection C.H	Ø 22 mm copper
Return Connection C.H	Ø 22 mm copper
Main Water Pressure	Min. 0.4 bar/5.80 psi
	Max. 5.0 bar/72.5 psi
System Pressure C.H	Min. 0.5 bar/7.25 psi
	Max. 3.0 bar/43.5 psi
Fan	240 V-50 Hz type DROUARD CP 78
Electrical Supply	240 V - 50 Hz - 150 W - Fused at 3
Internal Fuse Ratings - 20mm	Main: F3 A-Transf.: T 0.25 A
Water Content C.H	0.6 l / 0.13 gal
Water Content D.H.W	0.5 l / 0.11 gal
Pressure Relief Valve C.H	Ø 22 mm copper
Pressure relief Valve D.H.W	Ø 15 mm copper
Nett Weight	42 kg / 92.5 lb
Circulating Pump	Euramo GOLD L
Expansion vessel	8 l - pressure 0,5 bar
NOTE : Gas Rate Based on Cal Value 38.7 MJ/m <sup>3</sup> - 1038 Btu/ft <sup>3</sup>	

## Gas Supply

The boiler requires a minimum gas supply pipe of 22 mm copper or 3/4 in Bsp steel pipe. The union service cock is supplied fitted to the boiler to facilitate the servicing. The gas meter must be of adequate size to cope with the increased load and the test point pressure at the appliance inlet should be 20 mbar (8 in. w.g.). When an existing meter or service pipes are to be used, or if the outlet pressure at the meter test point is lower than 20 mbars (8 in. w.g.), the installation should be checked first by the Local Gas Region.

**Note :** All installation pipework must be fitted in accordance with BS.6891. Only the local Gas Region are allowed to remove or replace gas meters. Supply pipework must not be less than the appliance inlet connection size. The complete installation must be tested for gas soundness and purged in accordance with the above code.

## Flueing

This boiler must be connected in accordance with the requirements of BS. 5440 Part 1.

Wall thicknesses available are shown on Table 3 (see page 6).

In some conditions a terminal guard is required by Building Regulations, particularly when the terminal could come into contact with people near the building or to subject a damage (see below).

As a guide, within a distance of 2 m (6 ft) above a balcony, grand or flat roof.

This terminal guard is available from our distributors.

## Air Supply

Air supply for combustion and ventilation must be provided in accordance with BS.5440:2.

If the appliance is installed in a cupboard or compartment, permanent air vents are required in the cupboard or compartment, one at high level and one at low level, either direct to the outside air or to a room. Both high and low level air vents must communicate with the same room or must both be on the same wall to outside air. The minimum effective areas required are given in Table 2. Details of essential features of cupboard/compartment design, including airing cupboard installations, are given in BS.6798.

**Table 2 - COMPARTMENT INSTALLATION**

POSITION OF AIR VENTS	Air from room	Air direct from outside
High level	256 cm <sup>2</sup>	128 cm <sup>2</sup>
and low level	(40 in <sup>2</sup> )	(20 in <sup>2</sup> )

## Electrical Supply

Wiring external to the appliance must be in accordance with the current I.E.E. Wiring Regulations and any local regulations which apply.

The boiler is supplied for 240 V-50 Hz. Fuse the supply at 3 A.

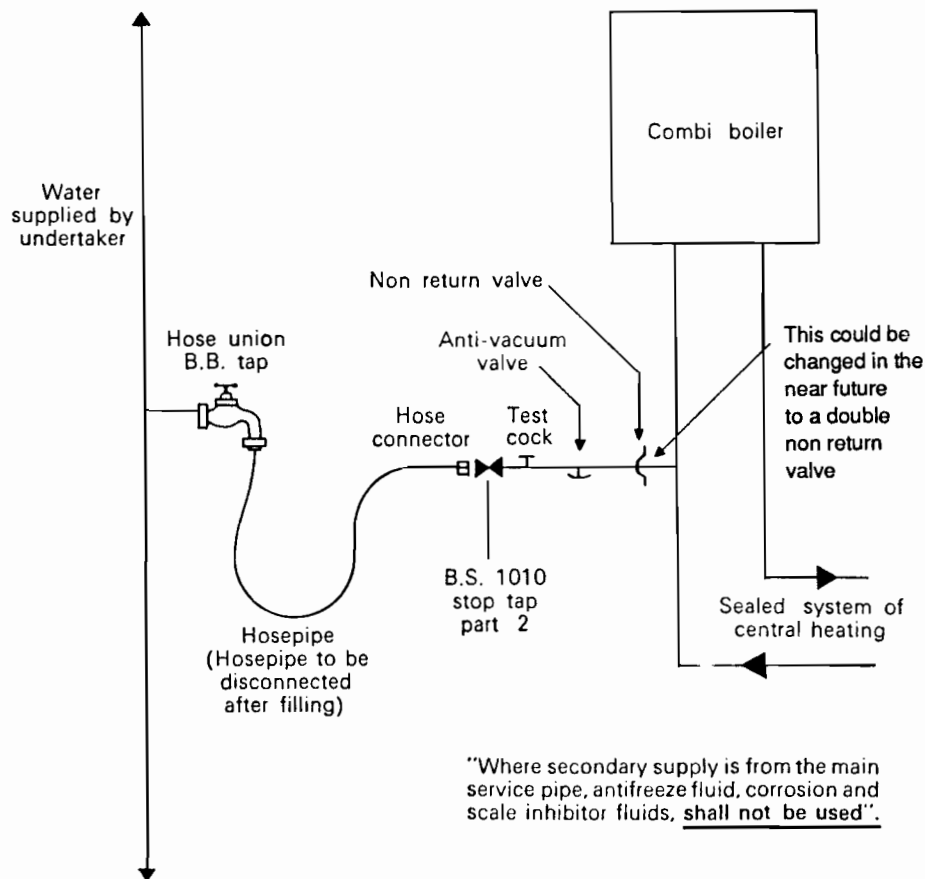
The method of connection to the mains supply must facilitate complete electrical isolation of the boiler, preferably by use of a fused three-pin plug and unswitched shuttered socket outlet to the requirements of BS.1363. Alternatively, a fused double pole switch, having a 3 mm (1/8 in) contact separation in both poles and serving only the boiler, may be used.

The point of connection should be accessible and adjacent to the boiler.

## Water Requirements - Central Heating

A direct mains water connection to sealed systems is NOT permitted by the Water Authorities : a suitable temporary filling arrangement is detailed in Fig.1 (see page 6).

The central heating system should be in accordance with the recommendations in BS.6798 and in addition, for smallbore and microbore systems, BS.5449:1. Draining cocks should be at least 1/2 in BSP. nominal size and in accordance with BS.2879. Copper piping to BS.2871 is recommended.



N.B. - The above mentioned fittings (other than the hose union tap) may form an integral part of the manufactured unit.

Fig. 1

### Wall thickness available

Rear Flue		Side Flue	
mm	in	mm	in
400	15.7	408	16.0
750	29.5	658	25.9
1150	45.2	1058	41.6
1500	59	1408	55.4

TABLE 3

A : Standard flue kit

B : Extension flue kit  
(1 short)

C : Extension flue kit  
(1 long)

D : Extension flue kit  
(1 long + 1 short)

Note : side flue thickness take account of minimum 100 mm clear between the boiler and the wall. Maximum thickness available decrease by the additional clearance over 100 mm.

### Domestic Hot Water

A direct connection to the mains water supply should be made in 15 mm copper pipe, using a BS.1010 stop cock (fixed jumper) for isolation and servicing purposes.

Some Water Authorities require that if the mains pressure rises above 5.0 bar (73 psi) a pressure reduction valve must be fitted. Check with the Local Water Authority.

Direct connection to fixed head showers is allowed, but if a loose head shower can fall lower than 13 mm (1/2 in) above the top edge of the bath, a suitable anti-siphon valve must be fitted.

Copper piping to BS.2871:1 must be used for water supplies.

**Note :** The incoming mains water supply must be at a pressure higher than 0.4 bar (6 psi) providing a minimum flow rate of 2.7 l/h (0.6 gal) to operate the appliance.

### Hard Water Areas

If this appliance is to be fitted in an area where the Temporary Hardness of the water exceeds 200 ppm, it is strongly recommended that an in-line water softener is fitted. Details of suitable types can be obtained from the distributors. Check with the local water authority.

### Location

THIS APPLIANCE IS NOT SUITABLE FOR EXTERNAL INSTALLATION.

The boiler can be installed on any non-combustible wall, which should be flat, vertical and adequate to support the weight of the boiler filled with water and ancillary fittings.

If it is to be installed in a Timber-Framed building, it must be fitted in accordance with the British Gas publication, Guide for Gas Installations in Timber-Framed Housing - Reference DM.2.

**Important Note :** This boiler must not be fitted in a bedroom, bathroom or any room containing a shower or bath.

It is recommended that the boiler is fitted on an outside wall, whenever possible, to facilitate direct flue-ing and drain pipework, although full facility is provided to pass the flue assembly through an adjacent (side) wall.

Ensure that the minimum clearances for servicing are available and leave adequate clearance in front of the boiler for operation (fig 2).

### Personal Safety

Observe the Health and Safety Code : always wear protective gloves when handling or lifting sheet metal components, and goggles when drilling or chiselling brickwork.

## GUIDE TO SYSTEM REQUIREMENTS

1. The installation must comply with the requirements of BS.6798 and BS.5449:1.
2. The installation should be designed to work with flow temperatures of up to 82°C .
3. All components in the system must be suitable for a working pressure of 3.0 bar (45 psi) and a temperature of 110 °C. Care should be taken when making joints to minimise any chance of leakage.
4. The following components are incorporated within the appliance : circulating pump, pressure gauge and temperature-indicator combined, range 0-4 bar (0-59 psi). Automatic bypass valve, pressure relief valves to both heating and hot water circuits pre-set 3.0 bar (45 psi). Flow pressure valve (heating), flow pressure modulating valve (D.H.W.), 5 litre expansion vessel (pressurised to 0.5 bar).
5. Make-up water. Provision must be made for the replacement of water lost from the system. A suitable method is of temporary connection as shown in Fig.1, subject to local Water Authority requirements.
6. The maximum water capacity of the system should not exceed 110 litres (23.3 gals) and the system must be pre-pressurised to a minimum of 0.5 bar. Should the system capacity exceed that stated, it will be necessary to install a second expansion vessel on the return pipework to the boiler. For further details refer to BS.5449:1 and British Gas publication "Specifications for Domestic Central Heating and Hot Water".

### Packaging

The boiler is supplied in one pack containing the boiler assembly, including the standard balanced flue assembly. Also included is a package containing :

- Installation and Servicing Instructions
- Users Instructions
- A Carton Contents List
- Warranty Card
- Miscellaneous (see Carton Contents List)
- Mounting Template.

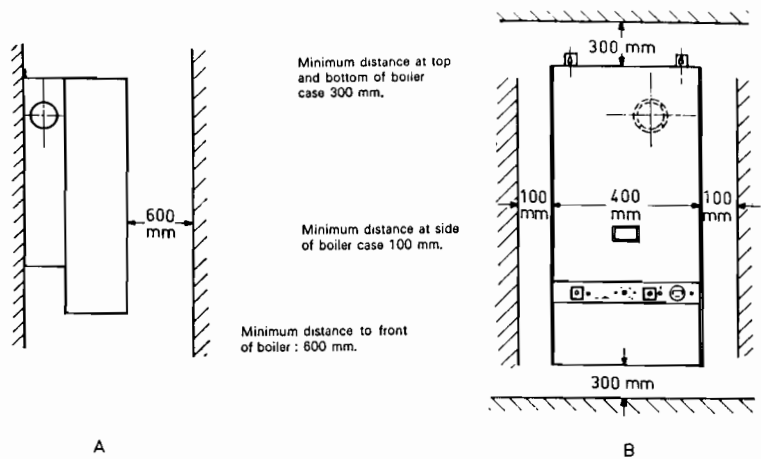
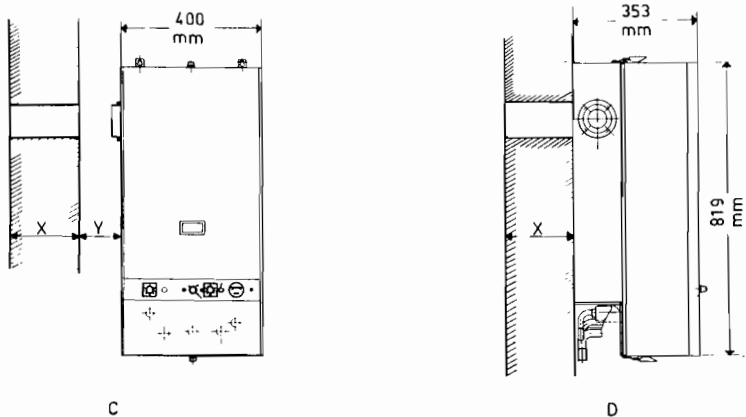


Fig. 2



Standard Balanced Flue Assembly

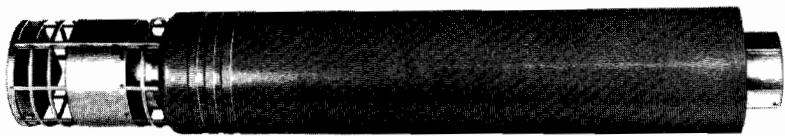


Fig. 2E

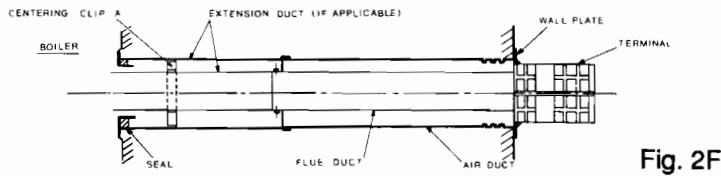


Fig. 2F

Diameter of the hole		
Table 4		
96 mm	A	Standard flue kit
106 mm	B	Extension flue kit ( 1 short )
116 mm	C	Extension flue kit ( 1 long )
126 mm	D	Extension flue kit ( 1 short + 1 long )



## SECTION 1 - Fixing the boiler

- 1.1. Choose the position on the wall for the boiler to be fitted, taking the boiler's dimensions into account. The center line of the flue shall be situated a minimum of 0.4 m from any opening window and 0.6 m from any ventilation outlet. Also note that, for rear flue fitting, the flue is **not central to the boiler**. See template.
- 1.2. **Important** : Ensure that the wall structure is such that it is capable of holding the weight of the boiler (for boiler weight, see technical instructions, if necessary, use an alternative method for fixing).  
Ensure that the wall is vertical and flat.
- 1.3. See fig. 2. B. the minimum clearance should be maintained between the top, sides and bottom of the boiler, so that the connections to the boiler can be made with ease and the boiler can be removed for repair and servicing.
- 1.4. If the boiler is to be flued to the side, remove the spigot from the rear of the boiler (4 screws), remove the blanking disc from the appropriate side (4 screws) and interchange the two components.
- 1.5. Take the template and hang it on the wall in the chosen position, using the appropriate side of the template for either rear or side flue connection. Tape is enclosed in the box for the fixing of the template on the wall.
- 1.6. Drill out the two holes (8 mm) for the hanging position of the boiler at the top. Fill wall plugs and screws, supplied, so that the heads are about 10 mm from the wall.
- 1.7. Make a hole in the wall for the flue assembly.  
**Important** : the diameter of the hole depends on the wall thickness and the extension needed to give a slope to the flue of approximately 1 cm per meter, sloping downwards towards the outside. Diameters of the hole are given in Table 4.
- 1.8. Measure exactly the thickness of the wall.  $x$ . (fig. 2c 2d)  
a) for rear flue connection, add 5 mm i.e.  $x + 5$  mm  
b) for side flue connection, add the distance between the side wall and the appliance side (shown on template),  $y$ , and subtract 8 mm i.e.  $x + y - 8$  mm.
- 1.9. Remove inner flue duct from outer flue duct. Cut flue to required length, as follows : Cut the plastic air duct to the calculated length **at the plain end**. With the terminal secured by its two pins, cut the same length from the other end of the metal flue duct.
- 1.10. From the plain end of the plastic duct, push the terminal end of the metal duct through until the terminal protrudes at the other end.  
**Note** : in its correct position, the plain end of the metal duct should protrude 30mm beyond the plain end of the plastic duct. Separate the two ducts.
- 1.11. Fix the centering clip (A) at the plain end. (fig 2F)
- 1.12. Where extension ducts are used, make any cuts on the plain ends of these rather than the standard ducts.
- 1.13. Remove front cover from boiler, by first, pulling off the three plastic control knobs, unscrew the two nuts (lighter push button and pilot off) and the two Cp screws on the control panel, unscrew the retaining screw on the top retaining clip and unclip the two retaining clips at the top and the bottom of the boiler casing. Carefully pull upwards and remove.
- 1.14. Hang the boiler on the mounting screws, tighten the screws.
- 1.15. From outside, pass the terminal/flue duct assembly through the wall and locate onto the appliance spigot. Push fully home.
- 1.16. Line the notches in the air (plastic) duct with the raised seam on the terminal, push the duct through the wall and over the terminal until the end of the duct is flush with the outside wall, when it should be engaged on the appliance spigot - check engagement from inside. Fully tighten the boiler mounting screws.
- 1.17. Cement around the outside of the plastic duct having set to a downward slope from boiler to terminal. Ensure that the cement fills the cut grooves in the duct.
- 1.18. Fit the wall plate outside by two 6 mm screws.
- 1.19. For side flue connection, make good the wall at the internal wall face.
- 1.20. Fit the terminal guard (if necessary) by :  
a) placing the terminal guard over the terminal  
b) make sure that the clearance between terminal and terminal guard is 50mm  
c) drill the 4 holes  
d) fit the terminal guard by 4 screws of 6 mm

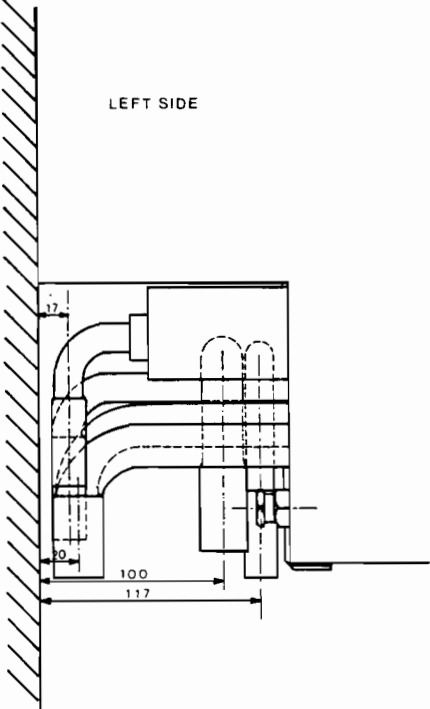
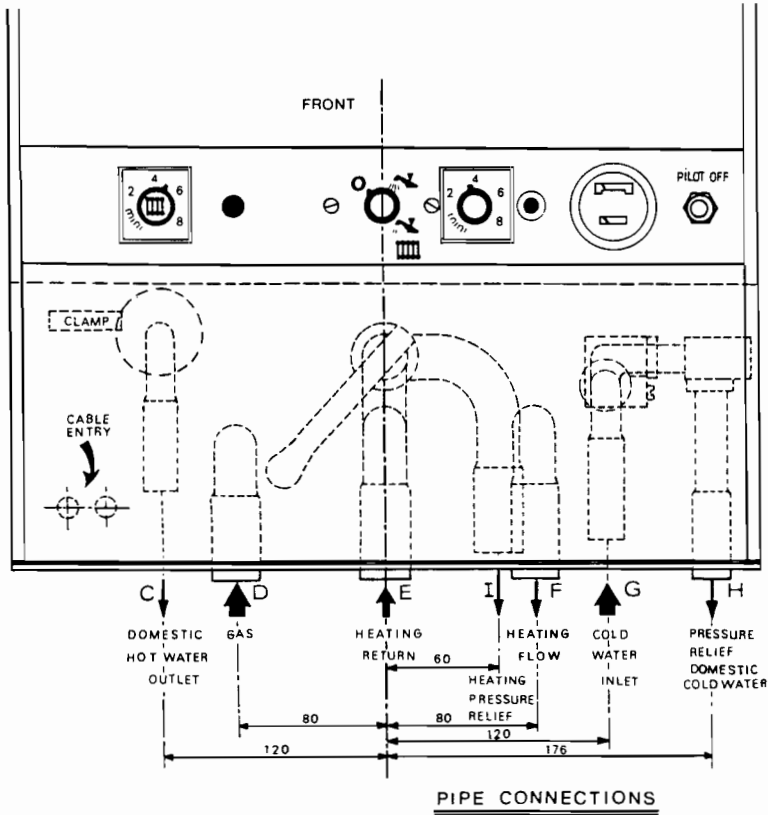


Fig. 3

To terminal block

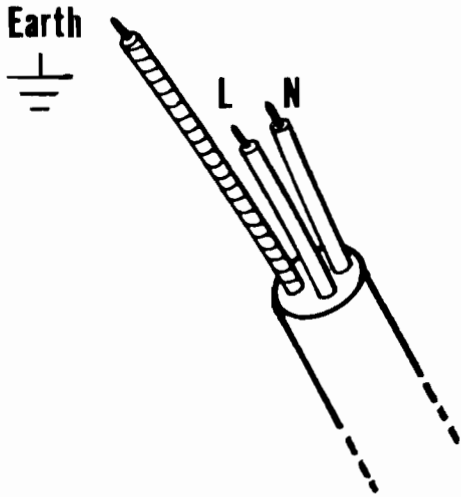
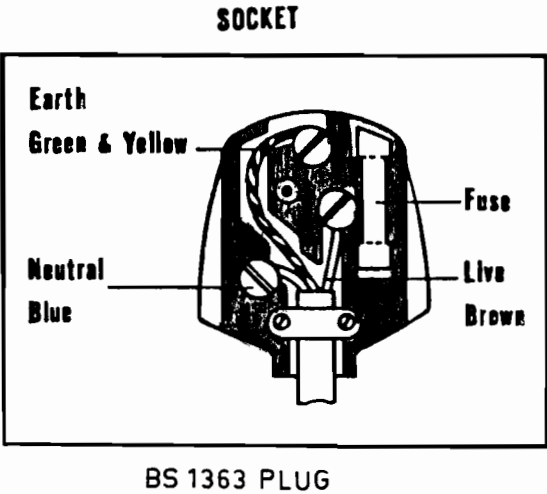


Fig. 4

## SECTION 2 - Connecting the Supply Pipes (Fig 3)

Fig.3 shows the five copper tail connections, identified as C, D, E, F and G, which are suitable for compression or capillary-soldered joints. Key letters H and I indicate the two pressure-relief vent connections which should be extended through the outside wall and run to drain in the manner described in BS.6798.

Remove all rubber sealing washers from the union connections at the boiler if using capillary soldered fittings.

The connections can, if required, be made prior to the completion of the full system installation.

1. Connect the gas supply 22 mm copper at D.
2. Connect the return pipe 22 mm copper at E, installing a draining cock at the lowest point in the pipework.
3. Connect the flow pipe 22 mm copper at F, and leave provision for the filling attachments.  
**Note** : This appliance has integral isolation valves on the flow and return. It is not necessary to fit others.
4. Connect the cold water mains supply 15 mm copper at G, and fit an isolating cock to B.S. 1010 in the supply pipework.
5. Connect the domestic hot water outlet pipework 15 mm copper at C.
6. Drill through the wall (if necessary) and connect discharge pipes 15 mm copper at H, and 22 mm copper at I.
7. Replace all sealing washers, firmly clip the pipework to the wall and tighten all connections.
8. Make-good the internal and external wall surfaces around the discharge pipework.

## SECTION 3 - Connecting the Electrical Systems (Fig 4)


### WARNING - THIS APPLIANCE MUST BE EARTHED

A mains supply of 240V-50Hz single phase is required. Wiring should be in 3 core PVC Cable not less than 0.75 mm (24 X 0,2 mm) to BS 6500, Table 16. Wiring external to the boiler MUST be in accordance with the current I.E.E. Wiring Regulations and any local Regulations which apply.

**Note** : Earth wire must be longer than L and N (Fig.4), so that the current carrying conductors become "tout" before the earthing conductor should the cable be pulled.

The supply connection must be made via a removable plug to an unswitched shuttered outlet socket. The both to the requirements of BS.1363, and fused at 3 A, wired as shown in Fig. 4 or via a fused double pole switch, having 3 mm (1/8 inch) contact separation in both poles and serving only the boiler and system controls.

## INTERNAL WIRING

1. Remove the terminal box screw and take off cover (D. Fig 5).
2. Pass the mains lead through the left-hand cable clamp entry, and secure the clamp.
3. Wire the supply to terminals marked L.N. and  and secure the cable clamp.

**Note** : The mains lead connections MUST be made in such a way that, should the lead be pulled from its anchorage, the current-carrying conductors become tout before the earth conductor.

Internal wiring of Controls Panel is shown in Fig. 7. A wiring diagram is also included behind the case.

## EXTERNAL WIRING

All external wiring MUST conform to current I.E.E. Wiring Regulations

**Note** : The time switch must have isolated contacts and the room- thermostat should be suitable for low voltage. - Do not use L and N connections in the terminal box of the boiler to connect the time-switch but connect as described Fig.6.

### Room-thermostat and time-switch

Pass the room thermostat and time-switch cables through the right- hand cable entry, remove the link and connect the output leads to the appropriate terminals, as described Fig.6.

Ensure that all cable runs are clear of sheet metal or hot components and, where applicable, are firmly clipped to the wall.

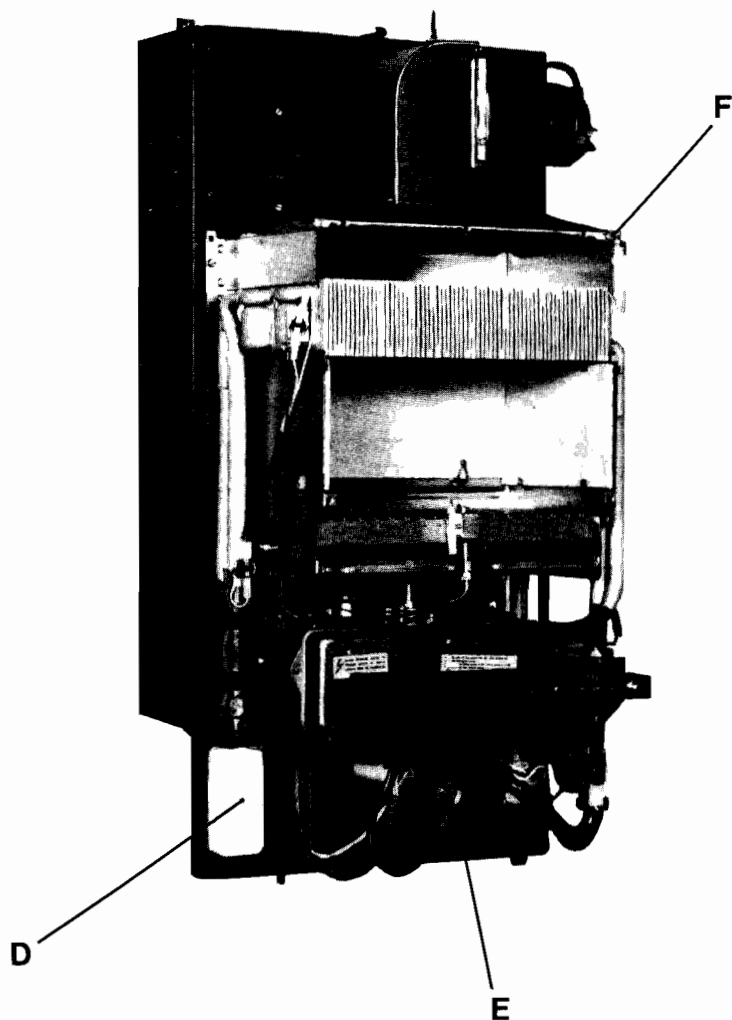


Fig. 5

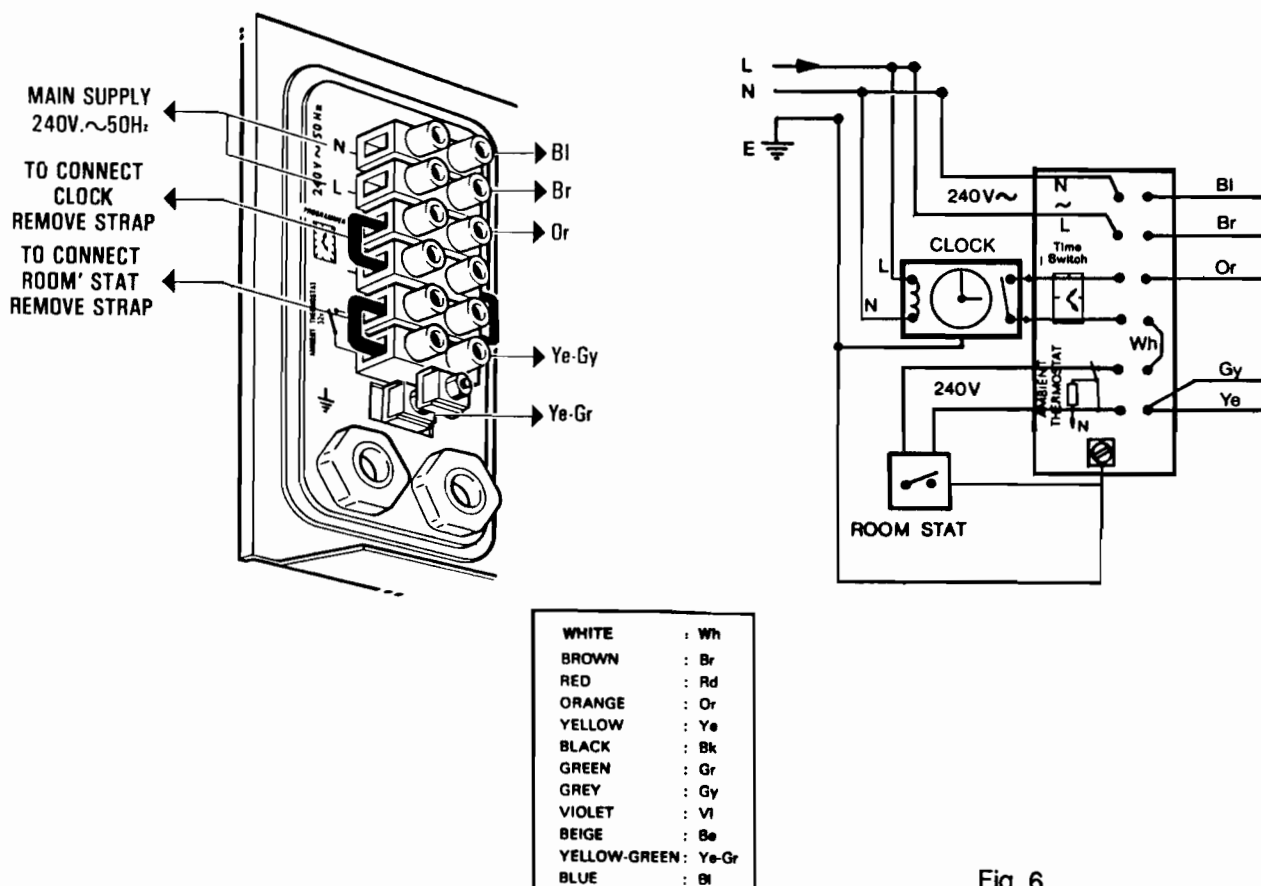
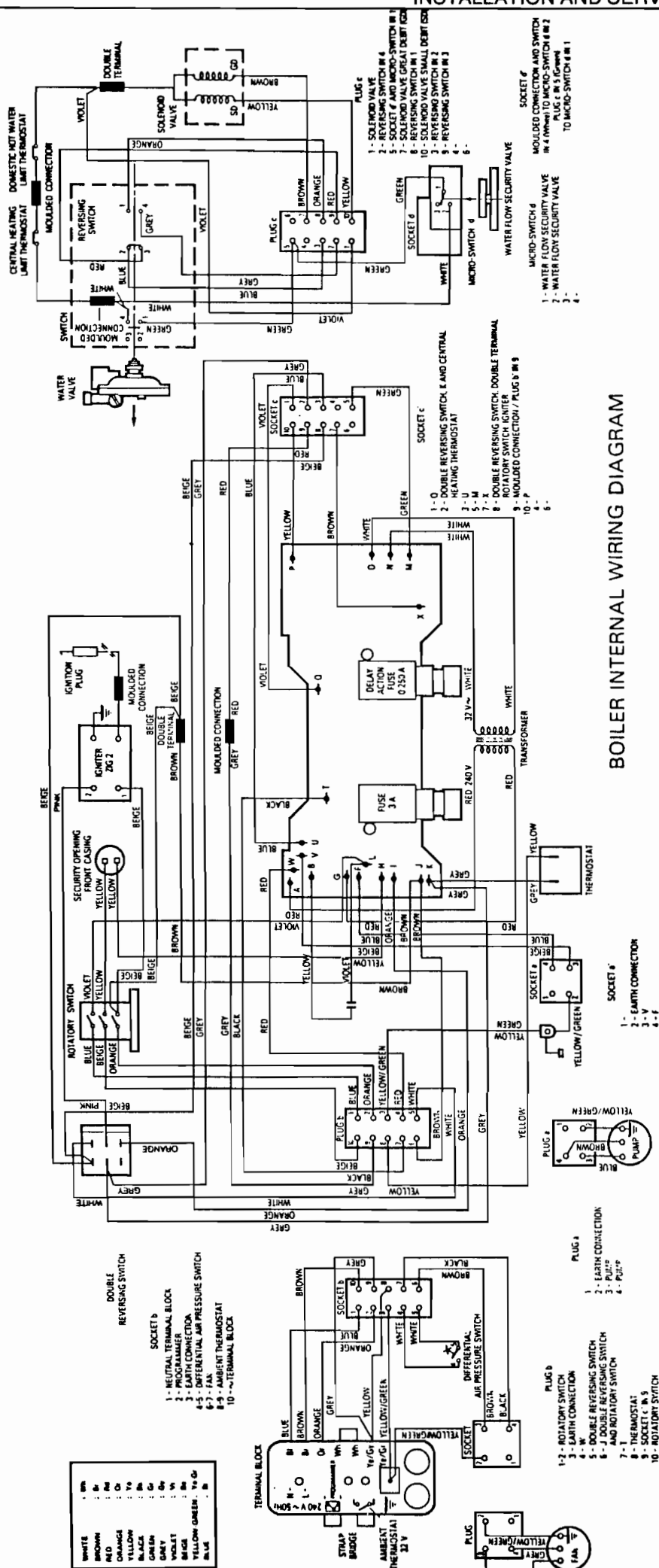


Fig. 6



**Fig. 7**

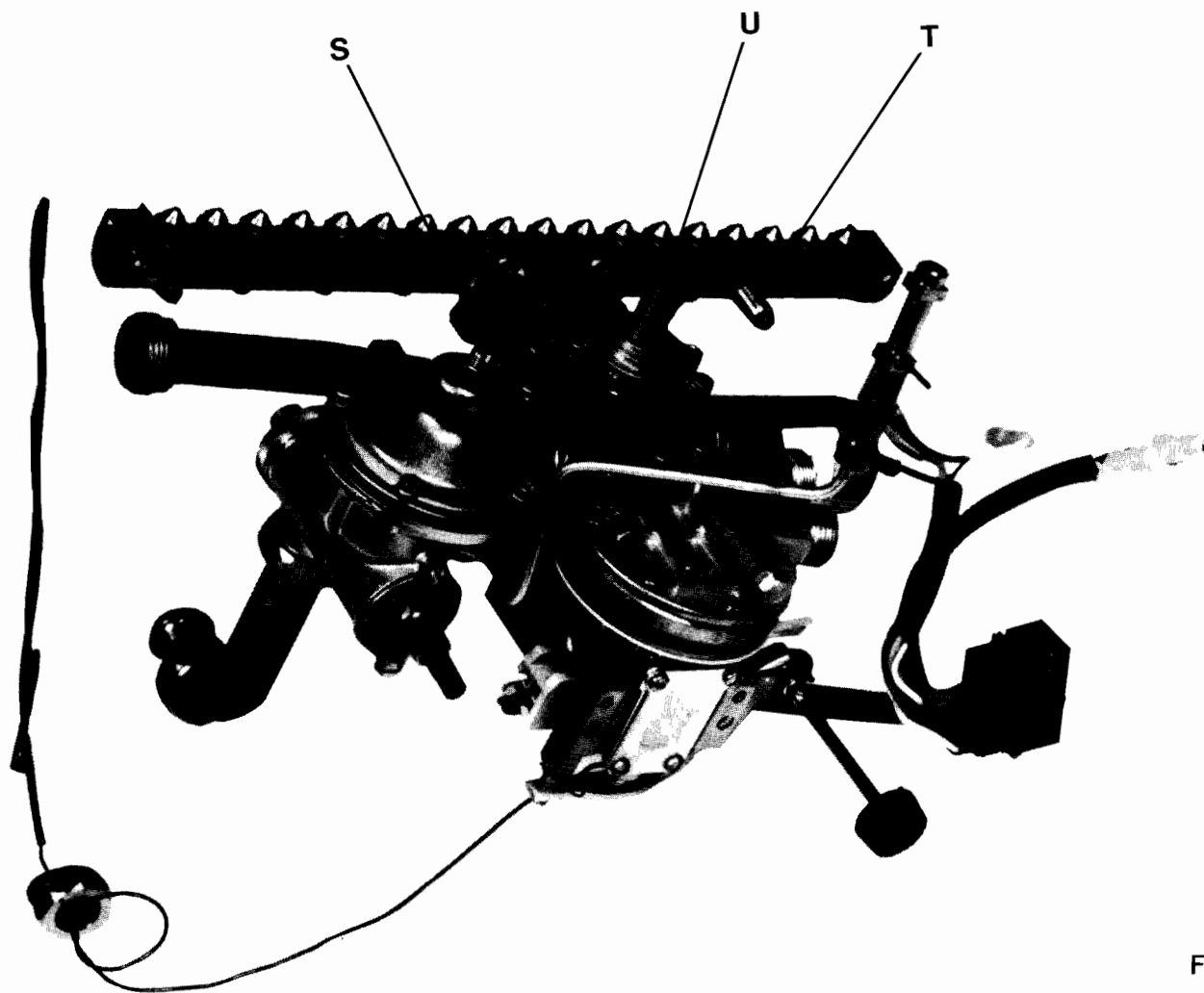


Fig. 8

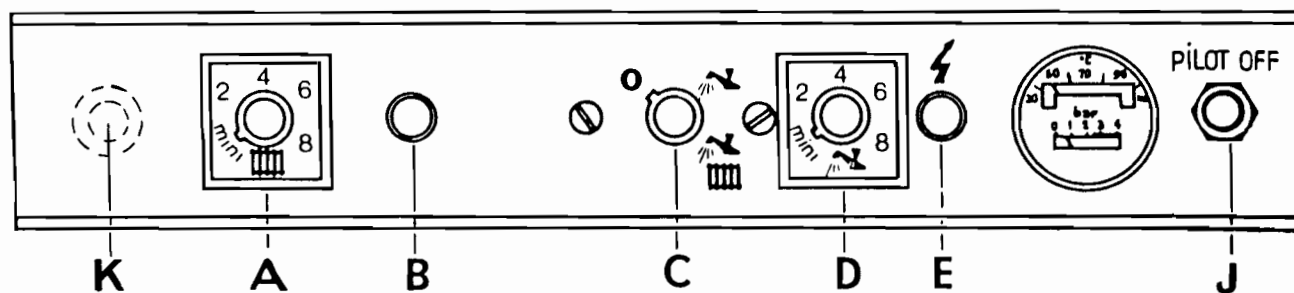


Fig. 9

## COMMISSIONING AND TESTING

### Water System

Open all isolating valves (Fig. 21 and 22 Servicing - see page 24).

- a. Fill the central heating system by connecting a flexible hose as shown in Fig. 1 and flush out the system via the drain cock in the return pipe.
- b. Close off the drain cock and refill.
- c. Bleed off the air from all radiators and from the circulating pump by removing the front screw plug (see E - Fig. 5). Loosen the manual air vent screw (see F - Fig. 5) and fill to the required pressure.
- d. Water pressure in the central heating system must always be greater than 0.5 bar (7.4 psi) and not greater than 2 bar.
- e. Disconnect the flexible hose and bleed off water, if necessary, until the correct pressure is reached.
- f. Check out the whole system for water soundness.

### Gas Installation

Turn on the main gas supply, open the appliance service cock and test the whole gas installation, including the meter, for gas soundness test in accordance with BS. 6891 and purge air out of the system via the test nipple service cock P (Fig. 21).

**Caution :** Whilst carrying out this test, extinguish all naked lights, turn off pilot lights to any adjacent appliances, and open windows.

Turn off service cock. Replace test nipple screw.

### Electrical Installation

Carry out a final electrical safety check to ensure continuity of earthing and system conformity, using a British Gas Multimeter, or similar instrument.

**Note :** These checks should only be carried out by a competent person.  
Replace any covers removed.

### Initial Lighting

Setting up the Gas Pressures :

For gas settings see Table I - Page 4 or Data Badge located on the appliance at the right hand lower back panel.

The boiler is adjusted to a nominal gas input of 23.2 kW (79,400 Btu/h) for domestic hot water which is controlled by a modulating high/low gas valve. Any slight adjustments to this rate may be made by adjusting the main gas governor screw - See S - Fig. 8 (Clockwise increases pressure).

This boiler is range-rated with on-off burner action for the central heating output and is supplied pre-set to its medium rate of 14.0 kW (48,000 Btu/h). For lower outputs, the regulator screw (See U - Fig. 8) must be adjusted.


Proceed with lighting as follows:

With the outer casing still removed, remove the pressure test nipple screw T (Fig. 8) and fit a suitable pressure gauge. Temporarily re-fit control knobs A, C, D- (Fig. 9).

Set the domestic hot water as follows:

1. Check the water supply is on by turning on the nearest hot water tap (water should flow). Turn off.
2. Check the boiler pressure is not less than 0.5 bar shown on the lower scale of the gauge.
3. Check that the gas service cock is on.
4. Check that the electrical supply is switched on.
5. Set control knob C (Fig. 9) to the 'Off' position. (located between the two CP fixing screws of the control box).
6. Light the pilot as follows:

The boiler casing switch (K) must be held permanently in, as the case is not fitted. Use a piece of tape or a band wrapped around the control box.

- a. Set knob C to the position  (hot water)
- b. Push in button B and hold (Fig. 9)
- c. After sufficient time to purge any air from the pilot, push in igniter button E (Fig. 9), fan should start.
- d. Continue to hold in the igniter until the pilot lights.
- e. Hold in button B for a further 10 seconds, then release. The pilot should now remain alight.
- f. If the pilot goes out, wait 3 minutes and repeat this procedure, but hold in button B a little longer.
7. Check the pilot flame fully envelops the thermocouple tip and has a minimum flame design in accordance with Fig 10. The recommended range of operating parameter for the thermocouple is 6 mV mini to 10 mV.

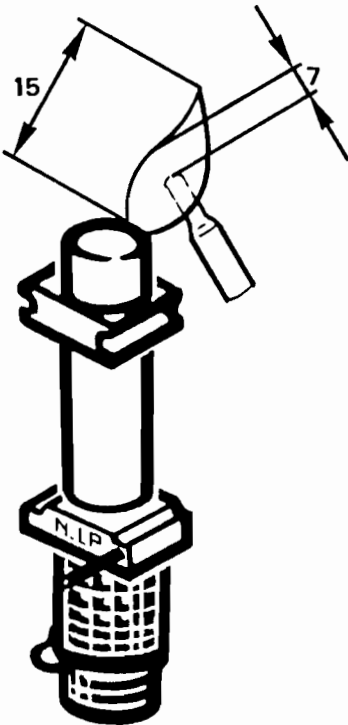


Fig. 10

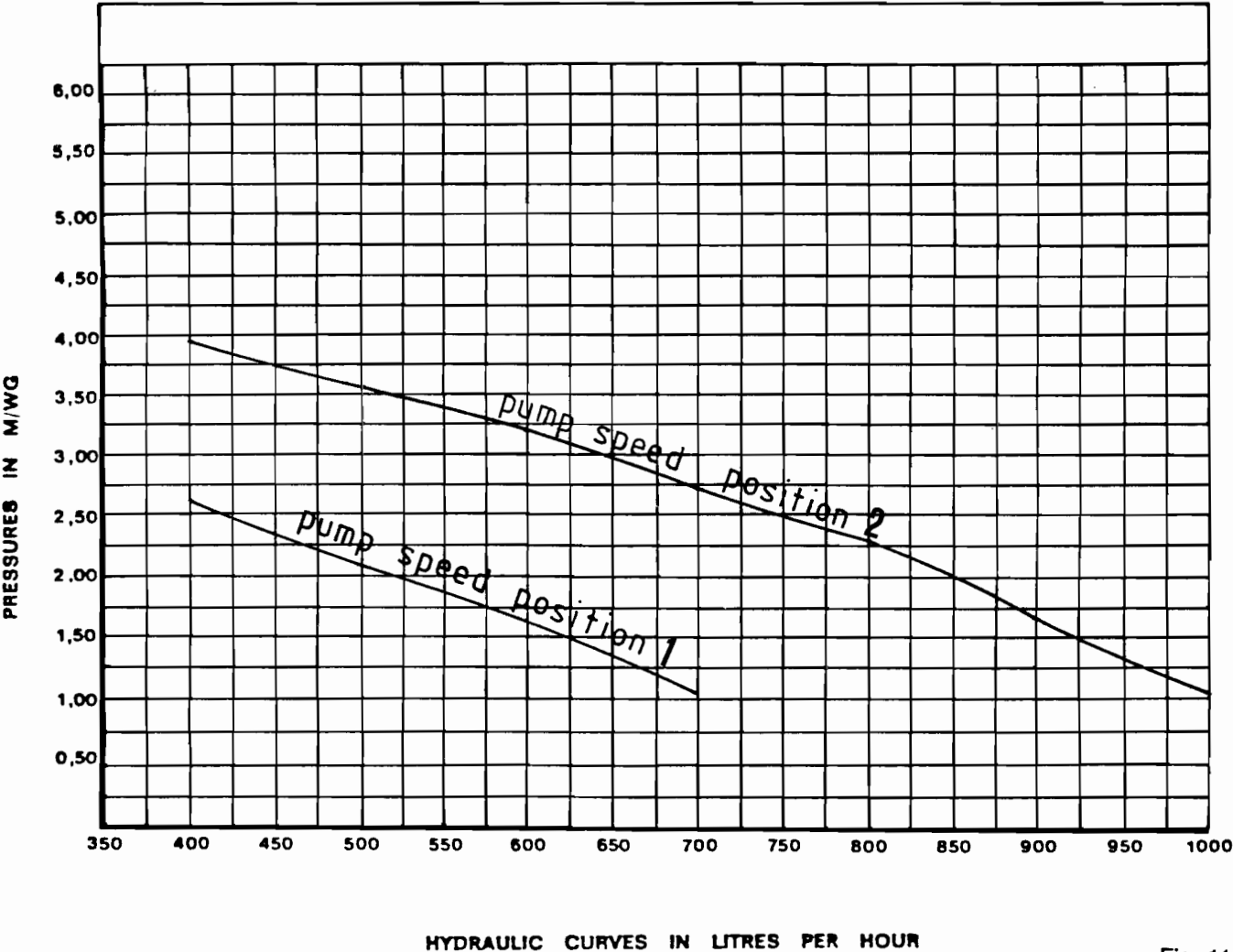


Fig. 11



Test the Domestic hot water operation as follows (the pump should not be operating) :

1. Set the temperature control knob D (Fig. 9) to No. 8 maximum fully clockwise.
2. Set the selection knob C to the hot water position (tap), if it's not.
3. Turn on fully the nearest hot water tap and the burner should light at its maximum rate, and fan speed will increase.
4. Allow the boiler to warm up for 5 minutes then check the pressure at the burner T (Fig.8). This should be at maximum rate - 11.8 mbar (4.7 in w.g). If this is not correct, set the governor S (Fig.8) to give the correct pressure. Turn clockwise to increase.  
Note the red seal is for factory use only and can be ignored.
5. Check the low rate operation of the burner.  
(Note : This setting is fixed and cannot be adjusted). Set knob D (Fig. 9) to No. 4 and partially turn off the hot water tap. Allow a few minutes and the burner should now modulate to its low rate.
6. Turn off the hot water tap.

#### **Setting the pump and central heating input**

1. Set the pump rate. The circulating pump has flow settings selected by a rocker switch on the left-hand side of the pump. Switch to the desired position to suit the system flow/resistance. Fig.11 shows the flow resistance curve for each setting.
2. Turn on the central heating by setting control knob A (Fig.9) to maximum No. 8 fully clockwise and knob C (Fig. 9) to the central heating symbol (tap and radiator) fully clockwise. Check that the room-stat and time switch (if fitted) are calling for heat and the burner should now light with the pump running.
3. Check the burner pressure. If adjustment is required in accordance with Table1, remove the protective cap from adjusting screw U (Fig. 8) and adjust input as required (clockwise to increase pressure).
4. Manually operate the room-stat and time switch to off and the burner should go out, leaving the pilot on. Switch back on again.
5. Turn control knob C to the 'Off' position O (Fig. 9) fully anticlockwise main burner will go off. Remove pressure gauge, refit test nipple screw.
6. Turn knob C fully clockwise to relight burner. Check for gas soundness on all appliance gas carrying components, including the burner pressure test nipple.
7. Check the pilot off button by pushing on. The burner does go out in a 3 seconds maximum time.
8. Relight the pilot. Check the thermocouple by turning off the appliance gas service cock and listening for a "click" in a 60 seconds maximum time.
9. Remove tape/band from boiler casing button.
10. Open gas service cock.
11. Using the indicator arrows provided, mark the respective set heat inputs on the appliance Data Badge.
12. Replace the boiler case in the reverse order to that described on Page 9 (1.13).
13. Recheck the appliance operation to ensure that the boiler casing button is functioning correctly.

**Note : The boiler has an overheat thermostat which cuts off the pilot flame.** In order to re-establish it, open an hot water tap in order to colder the boiler ; then relight the pilot.

#### **Handing Over**

After completing the installation and commissioning, the system can now be handed over to the householder.

Set the controls to the householder's requirements.

- a. Hand the User's Instructions to the householder and explain and demonstrate the lighting procedure.
- b. Explain the setting of the controls and the summer and winter requirements, shut-down procedures and frost procedures.
- c. Explain and demonstrate the functions of anytime switch, room thermostat and the overheat safety device.
- d. Draw to the attention of the householder their responsibilities under the Gas Safety (Installation and Use) Regulations 1984 and stress the importance of regular servicing by a competent person at least once a year.

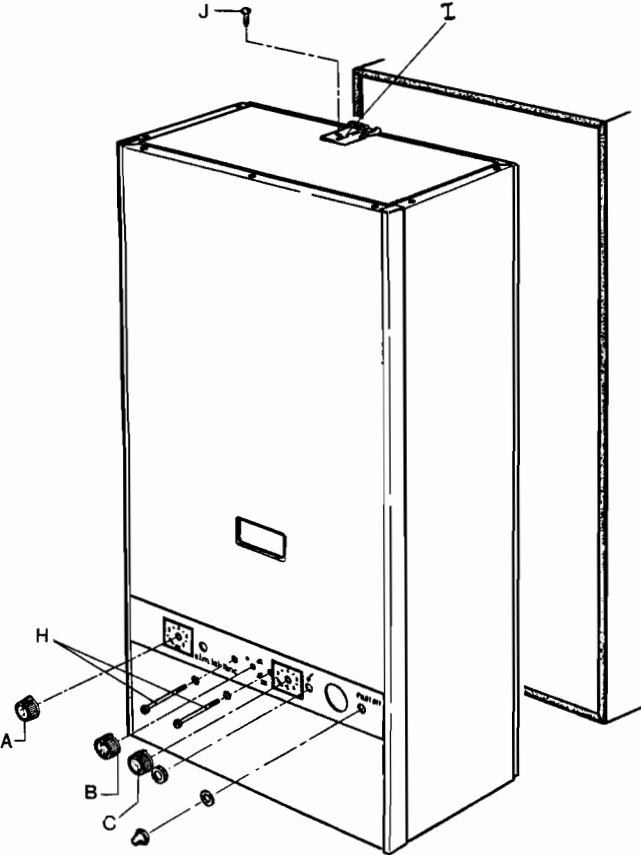


Fig. 12

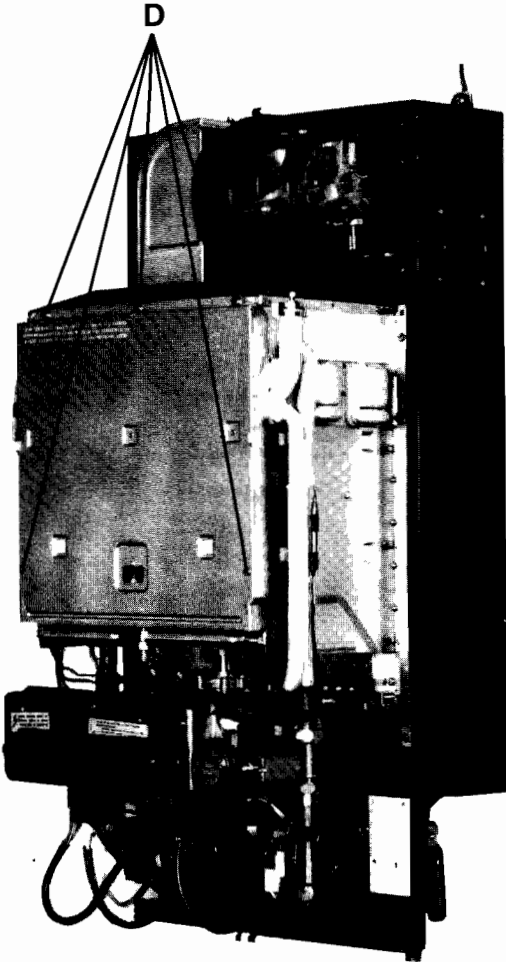


Fig. 13

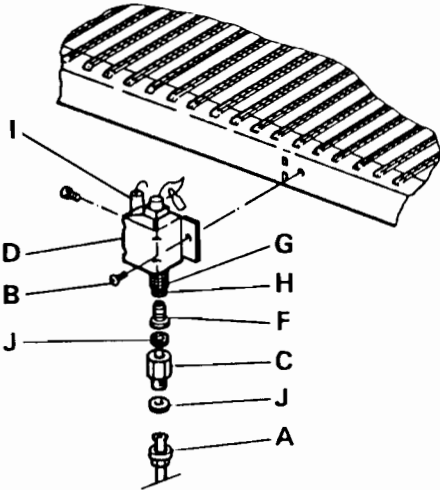


Fig. 14

## ANNUAL SERVICING - SCHEDULE

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**Warning :** Always isolate the electricity supply and turn off the gas supply at the appliance service cock before commencing any servicing.

For access to individual components refer to the relevant section given under REPLACEMENT OF COMPONENTS.

1. Run the boiler and check the operation of its controls and switches.
2. Remove the boiler case (Section 1) and visually check all water carrying components for signs of leakage or deterioration.
3. Remove the combustion chamber front panel (Section 2) and check the insulation panels for damage or deterioration. Replace if necessary (Section 8).
4. Remove the main burner. Inspect, clean or exchange bars and injectors as necessary (Section 6). Before replacing the main burner, cover the pilot tube, examine the heat exchanger and clean off any accumulation of deposit using an appropriate brush.
5. Remove any carbon deposits which have built up on the thermocouple tip.
6. Remove and clean the pilot assembly and injector (Section 3).
7. Replace components, covers and panels on completion of the service and run the boiler to ensure its correct operation in accordance with the Commissioning Procedures described in Stage 6.
8. Check the General Installation for correct clearances, air supply, ventilation, etc. in accordance with General Safety Regulations.

**Note :** When cleaning injectors either blow out or wash out. Never use a pin or wire.

**Important:** After completing any servicing or exchange of gas-carrying components, ALWAYS test for gas soundness and carry out functional checks of controls.

**Note :** When Servicing, the reassembly procedure will always be the reverse of the dismantling procedure unless otherwise stated.

## REPLACEMENT OF COMPONENTS

---

### **Section 1 : To gain General Access (Fig. 12)**

---

- 1.1. Pull off the 3 control knobs A, B, C.
- 1.2. Remove the 2 fixing screws H from the control panel and the 2 retaining nuts (lighter and pilot off).
- 1.3. Unclip the 2 retaining clips I at the top and bottom of the case (unscrew before the retaining screw on, the top clips).
- 1.4. Carefully pull forward the case and remove.

### **Section 2 : To access heat exchanger and burner assembly (Fig. 13)**

---

- 2.1. Gain general access as described in Section 1.
- 2.2. Remove the five screws D securing the combustion chamber front panel, 3 top and 2 bottom.
- 2.3. Swing the panel outwards and up from the bottom to disengage the location lugs.

### **Section 3 : To remove the air stray**

---

Release the air stray under the burner by pushing backwards to depress the spring clips. When it is re-fitted back, make sure that clips are correctly fitted.

### **Section 4 : To replace pilot assembly electrode (Fig. 14)**

---

- 4.1. Gain general access as described in Section 1.
- 4.2. Remove the combustion chamber front panel as described in sections 2.2 and 2.3.
- 4.3. Undo the pilot supply union nut A at the pilot housing, taking care not to lose the sealing washer.

**NB.** For better access release the air stray under the burner by pushing backwards to depress the spring clips.

- 4.4. Disconnect the spark electrode lead from the right-hand side of the control box. Remove the pilot bracket fixing screw B to the right of the pilot burner.
- 4.5. Remove the pilot assembly electrode by swinging outwards from the burner and disengaging the location lugs D.
- 4.6. The pilot assembly including the electrode may now be stripped to its component parts Fig.14 in order to clean/replace complete pilot assembly (C, F, G, H) and electrode assembly I (Fig.14).

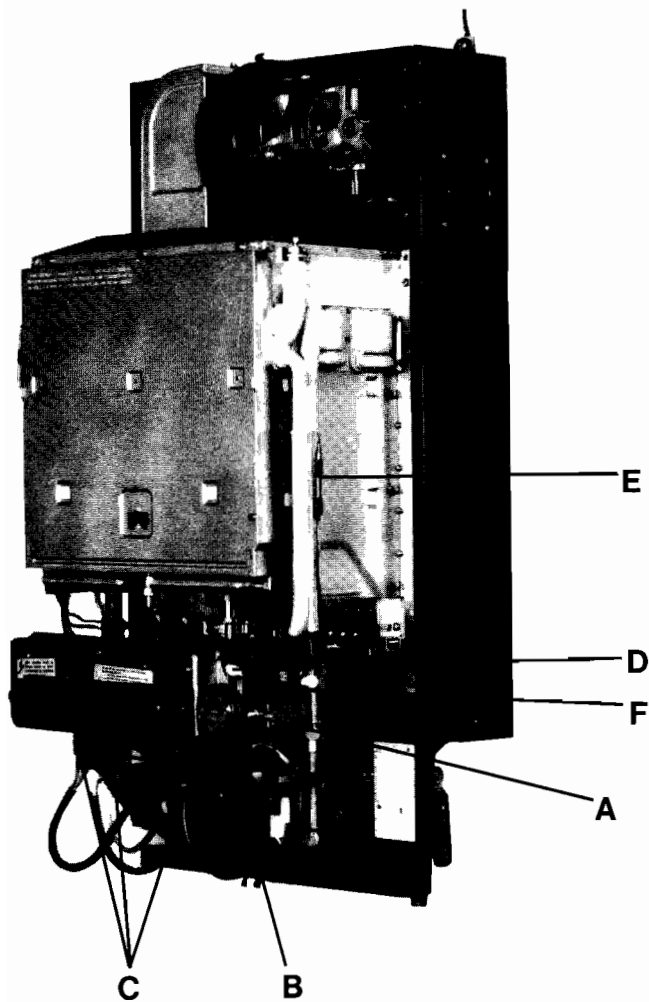


Fig. 15

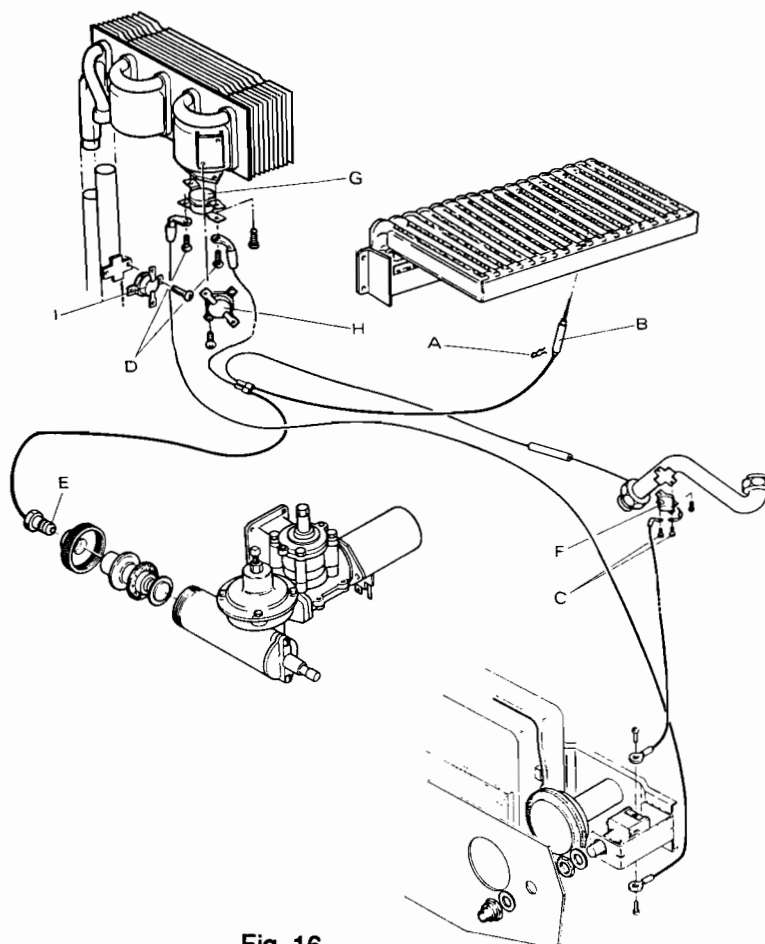


Fig. 16

**Reassembly Notes**

- a. Ensure that the pilot sealing washer J is re-fitted.
- b. Ensure that the pilot flame envelops the thermocouple tip as in Fig.15 and that the spark electrode gap is set between 4.0 - 4.5 mm (Fig.10)

**Section 5 : To replace the electrical control box ( Fig.15 ).**

---

- 5.1. Gain general access as described in Section 1.
- 5.2. Remove the pressure gauge by releasing the spring retaining clip A and withdrawing the gauge B.
- 5.3. Unplug the 3 electrical connections C from the control box.
- 5.4. Disconnect the spark electrode lead D from the right-hand side of the control box.
- 5.5. Withdraw the thermostat phial E from the C.H. flow pipe on the right-hand side of the heat exchanger.
- 5.6. Remove the control box by removing the single retaining screw F at the right-hand side of the bracket. Draw the control box forward and out.

Access is now available to the major components.

**Section 6 : To Replace the thermocouple (Fig.16).**

---

- 6.1. Gain general access as described in Section 1.
- 6.2. Remove the electrical control box as described in Section 4.
- 6.3. Release the air stray under the burner by pushing backwards to depress the spring clips.
- 6.4. Pull off the retaining spring clip A.
- 6.5. Draw the thermocouple body B downwards out of the burner rail assembly and the two screws securing the leads to the push button "Pilot off".
- 6.6. Remove the two screws C securing the wires to the overheat stat F on the C.H. flow pipe and the two screws D securing the second overheat stat G on the heat exchanger and the two screws securing the push button "Pilot off".
- 6.7. Undo the 10 mm nut E (Fig. 16) connecting the thermocouple to the rear of the thermo-electric valve body and remove.

**Note :** The recommended range of operating parameter for the thermocouple is 6 mV mini to 10 mV.

**Reassembly Notes**

Reform the new thermocouple as near to the shape of the old as is possible and refit it in the reverse order as described above.

Ensure the air tray is relocated.

Refer to wiring diagram when reconnecting leads.

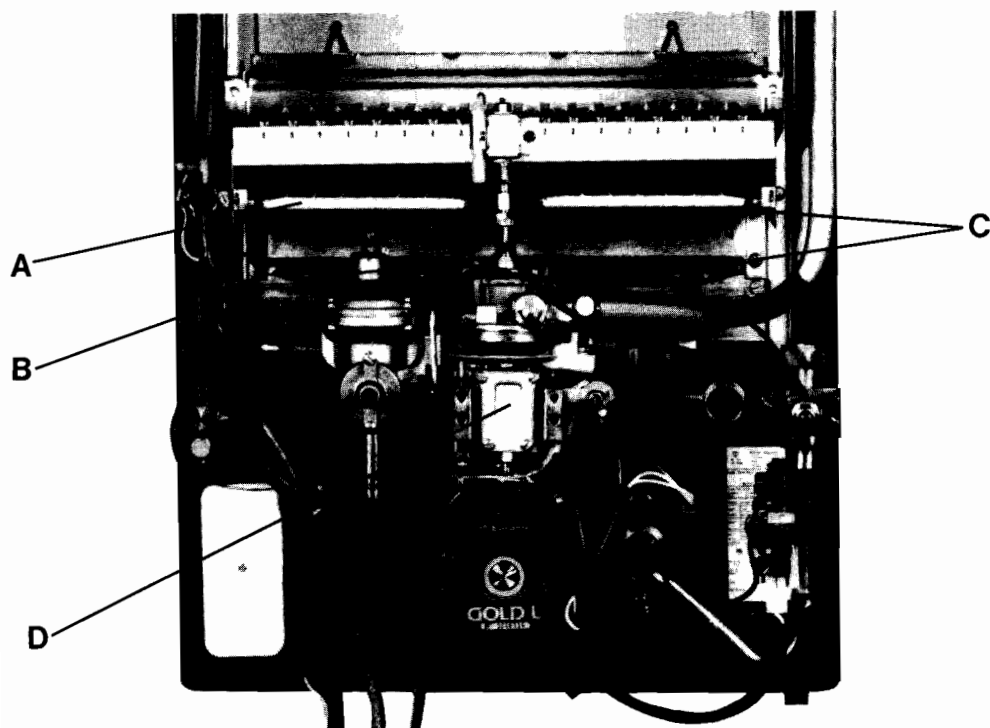


Fig. 17

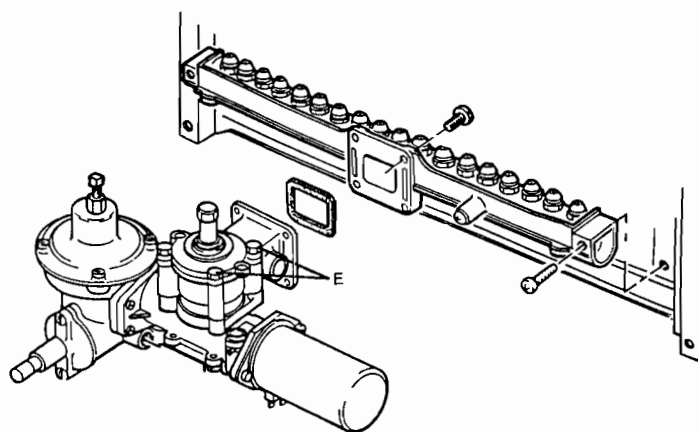


Fig .17 bis

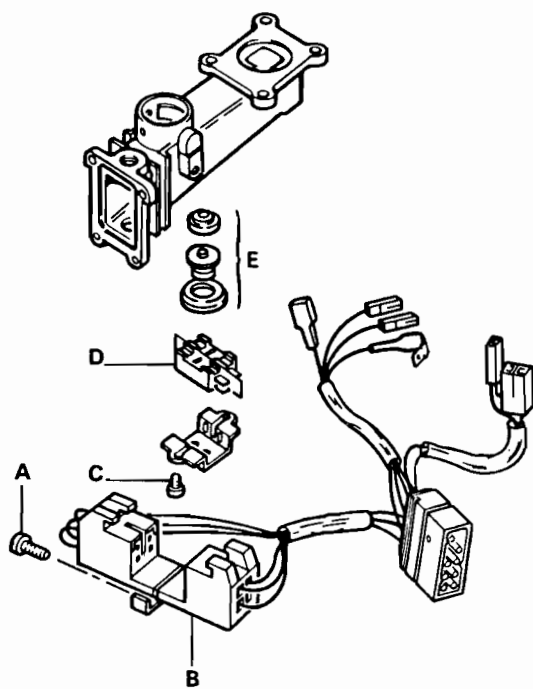


Fig. 18

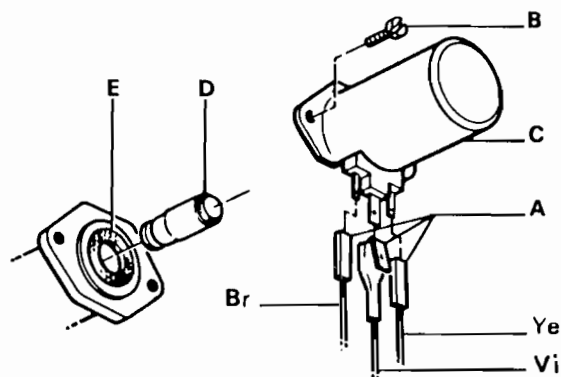


Fig. 19

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**Section 7 :To replace the burner main injectors (Fig. 17).**

---

- 7.1. Gain general access as described in Section 1.
- 7.2. Remove the combustion chamber front panel as described in Section 2 (2.2 and 2.3).
- 7.3. Disconnect the electrode assembly by unscrewing the fixing screw of the electrode bracket (Fig. 14).
- 7.4. Disconnect the thermocouple by pulling out the thermocouple clip head and pull down the thermocouple head.
- 7.5. Undo the union A (Fig. 14). Take care of the sealing washer J. (Section 7).
- 7.6. Remove the air stray A under the burner by pushing backwards to depress the clips and disengage the retaining lugs.
- 7.7. Remove the 2 screws B one at either end.
- 7.8. Unscrew the 4 screws E on the modulating valve (fig. 17bis).
- 7.9. Remove the burner bar.
- 7.10. Remove the burner by removing the 4 screws C fixing it to the appliance backframe ( 2 at either end).

**Servicing Notes** : Inspect, clean or replace injectors if necessary.

---

**Section 8 : To replace Insulation panels**

---

- 8.1. Remove the front panel as described in Section 2.
- 8.2. To replace front and back insulation panels, take off the 2 retaining clips, remove the insulation panels and replace.
- 8.3. To replace side insulation panels, take insulation panels, pull and replace.

---

**Section 9 :To replace water valve micro-switches (Fig. 18).**

---

**Note** : these micro-switches are located under the modulating box assembly (under the water valve)

- 9.1. Gain general access as described in Section 1.
- 9.2. Isolate and drain C.H. circuit and remove the pump as described in REPLACEMENT OF WATER-CARRYING COMPONENTS (Page 25).
- 9.3. Remove the fixing screw A of the plastic protector.
- 9.4. Disconnect the electrical connections B.
- 9.5. Remove the fixings screws C of the micro-switches support.
- 9.6. Remove the micro-switches assembly D.

**Reassembly Notes** : To replace the micro-switches assembly, take care to position the small membrane and ring E correctly.

---

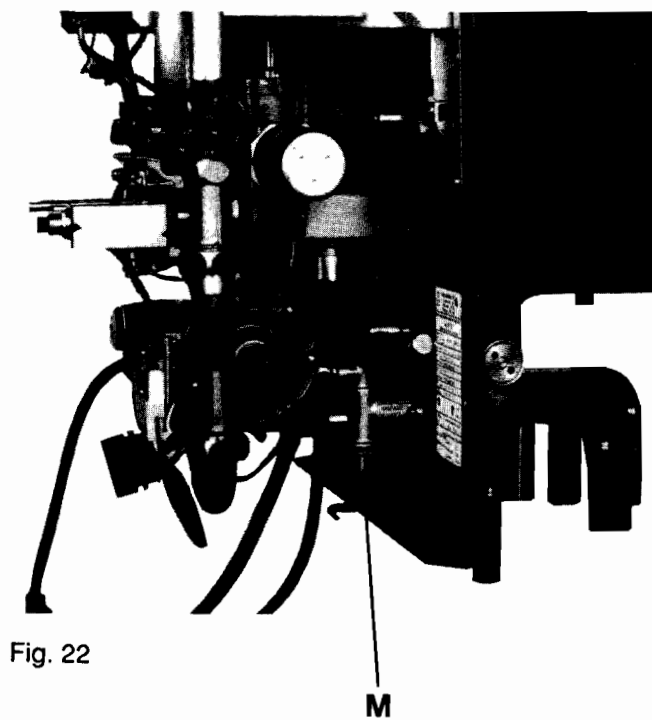
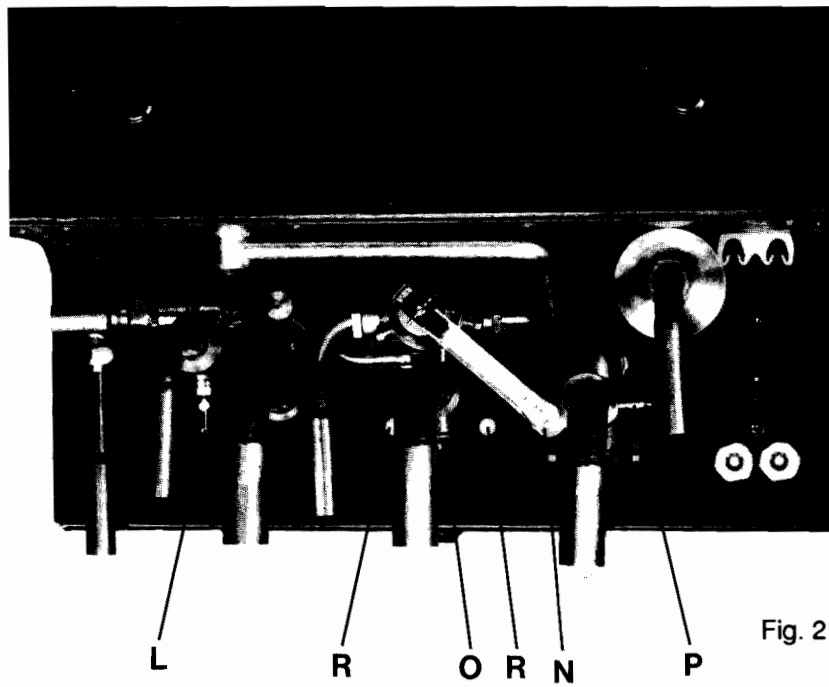
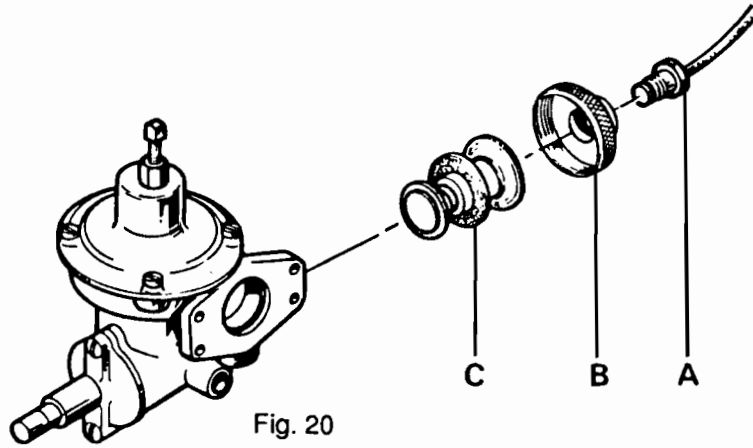
**Section 10 : To replace the solenoid armature and coil (R.H.S. of gas valve) Fig. 19**

---

- 10.1. Gain general access as described in Section 1.
- 10.2. Remove the electrical control box as described in Section 4.
- 10.3. Disconnect electrical connections A noting the position of the four colour-coded wires.
- 10.4. Remove the two screws B securing outer case of the solenoid.
- 10.5. Remove the armature and coil C and replace as necessary.

**Reassembly Notes**

- (a) Ensure armature is replaced with the O. ring D in the correct position as shown in Fig. 19.
- (b) Ensure that the rubber sealing washer E is located correctly and securely into its counterbore before assembling the solenoid outer case.
- (c) Ensure that the electrical connections are correctly replaced (See Fig. 19).





---

**Section 11 : To replace magnetic unit (Fig. 20)**

---

- 11.1. Gain general access as described in Section 1.
- 11.2. Remove the electrical control box as described in Section 4.
- 11.3. Slacken and remove the thermocouple connection (10 mm.) A.
- 11.4. Unscrew the magnetic unit end cap B, using 12 mm. spanner.
- 11.5. Remove and replace the magnetic Unit C.

---

**REPLACEMENT OF WATER-CARRYING COMPONENTS**

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**General**

---

Prior to the removal of any water-carrying components, the appropriate water circuit must be isolated and drained.

---

**To Isolate and Drain Water Circuits**

---

**Domestic Hot Water circuit. (Fig. 21)**

- (a) Gain general access as described in Section 1.
- (b) Close cold water inlet L Isolating Valve.
- (c) Open convenient hot water tap.

**Central Heating circuit. (Fig. 21 & 22)**

- (a) Close flow isolating valve M.
- (b) Close return isolating valve O.
- (c) Drain the system by pushing the lever of the safety-relief valve N.

---

**Recharging the C.H System**

---

Ensure that all isolating valves are open and recharge the C.H. system as shown in Fig.1.

---

**Section 12 :To Replace the Water Pump**

---

- 12.1. Gain general access, as described in Section 1.
- 12.2. Isolate the C.H. circuit, as described above.
- 12.3. Disconnect plugs to the control box.
- 12.4. Remove the 2 hexagon headed screws and washers fitted through the rear bulkhead panel (R Fig 21).
- 12.5. Support the pump weight and pull forward to clear the centre spigot connection, then downwards and out.



**Section 13 :To replace Domestic Hot Water Thermostat (Fig. 23).**

---

- 13.1. Gain general access as described in Section 1.
- 13.2. Isolate D.H.W. circuit as described above.
- 13.3. Remove electrical control box as described in Section 4.
- 13.4. Remove the spring-clip A and the cam lever B.
- 13.5. Remove the thermostat bulb C. Care must be taken not to lose the modulating knife D located inside the thermostat body.
- 13.6. Disconnect the union nut securing the thermostat phial into the heat-exchanger pipe and remove the thermostat phial E.

**Reassembly Notes**

- (a) Ensure that a new sealing washer is fitted when replacing the thermostat phial.
- (b) It is essential that the modulating knife is replaced onto the thermostat bulb with the knife edge running parallel to the boiler front (See Fig. 23)
- (c) It is also essential that all components are assembled onto the thermostat phial prior to re-fitting.
- (d) Ensure that the brass union nut is tightly secured.
- (e) Ensure that the cam lever is correctly fitted and that the adjustment screw is properly located and secured with the spring clip.  
**Note:** : The thermostat calibration is pre-set from the factory and no adjustment is possible.

**Section 14 :To replace the Heat Exchanger ( Fig. 24).**

---

14. 1. Gain general access, as described in Section 1.
14. 2. Remove the electrical control box as described in Section 4.
14. 3. Isolate and drain both water circuits, as described above.
14. 4. Disconnect the leads to the overheat stat G by removing the terminal screws D (Fig. 25)
14. 5. Pull off the terminal leads to the two overheat stats I , H, noting their position (Fig. 25).
14. 6. Disconnect the brass union nut K and drawout the thermostat phial from the base of the D.H.W. flow pipe (Fig. 24).
14. 7. Disconnect the D.H.W. flow bulkhead union O (Fig. 24).
14. 8. Disconnect the D.H.W. from the water valve nuts P (Fig. 24).
14. 9. Disconnect the union nuts J and L on the heating body outlet pipes. Unclip wire from domestic hot water flow Q (Fig. 24).
- 14.10. Remove the circlip N retaining the manual air vent pipe, lift upwards to disengage the O-ring connection, and remove the assembly.
- 14.11. Remove combustion chamber front panel (Section 2).
- 14.12. Remove the heat exchanger block M by drawing forwards and out.
- 14.13. Transfer 2 thermostats, one vent, 2 clips to secure the central heating control thermostat, and 2 to secure the left-hand wire harness to the new heat exchanger assembly.

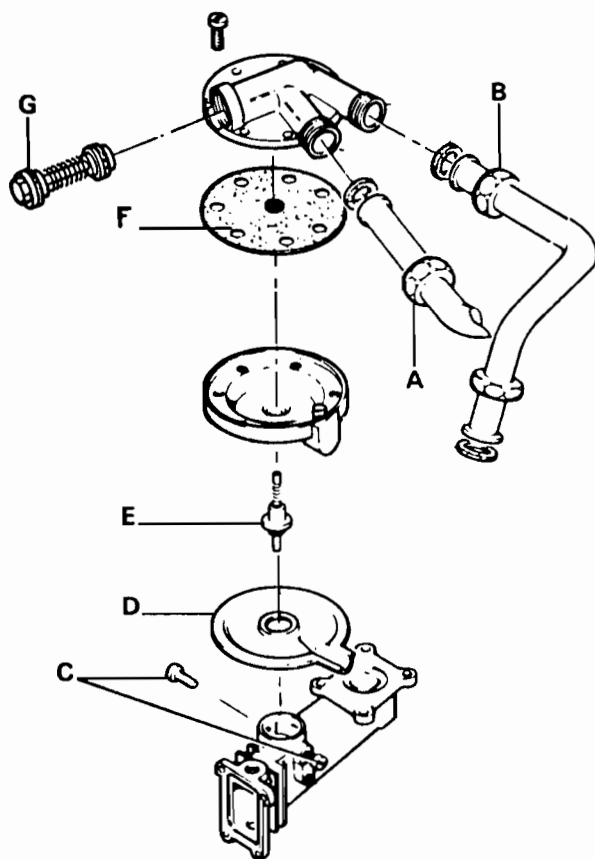


Fig. 26

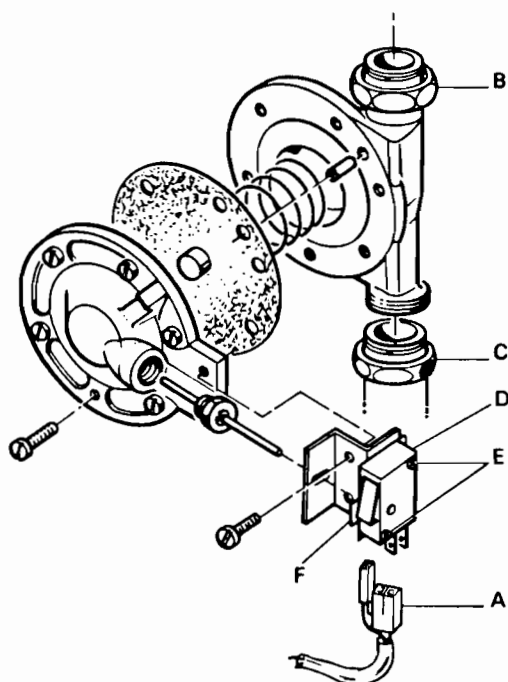


Fig. 27

**Section 15 : To replace the D.H.W. Flow Valve ( Fig. 26).**

---

15. 1. Gain general access as described in Section 1.
15. 2. Isolate and drain the D.H.W circuit as described above (Page 25).
15. 3. Remove the electrical control box as described in Section 4.
15. 4. Disconnect the front connection A to the valve and ease the pipe slightly to allow access to the rear connection. Retain the rubber sealing washer.
15. 5. Disconnect the rear connection B. Retain the rubber sealing washer.
15. 6. Slacken the two screws C one at either side of the valve, located beneath the plastic protection disc D.
15. 7. Remove the valve by pulling directly upwards.

**Servicing Notes**

- (a) Inspect and, where necessary, replace push rod assembly E in base of valve.
- (b) Inspect and, where necessary, replace the valve diaphragm F.
- (c) Remove, inspect and, where necessary, replace the by-pass piston assembly G.

**Section 16 : To replace the Differential Flow Valve (R.H.S. of Boller Controls) (Fig.27)**

---

16. 1. Gain general access as described in Section 1.
16. 2. Isolate and drain the C.H. circuit as described above.(Page 21)
16. 3. Disconnect the integral push-on connector A from the microswitch.
16. 4. Disconnect the top and bottom unions B,C and remove valve complete.

**Servicing Notes :** Inspect and, where necessary, replace the valve microswitch D. This may be achieved by removing the two fixing screws E and replacing the microswitch. Care must be taken not to lose the insulation gasket.

**Section 17 : Replacement of various overheat and limit thermostats**

---

**General**

Gain general access as described in section 1.

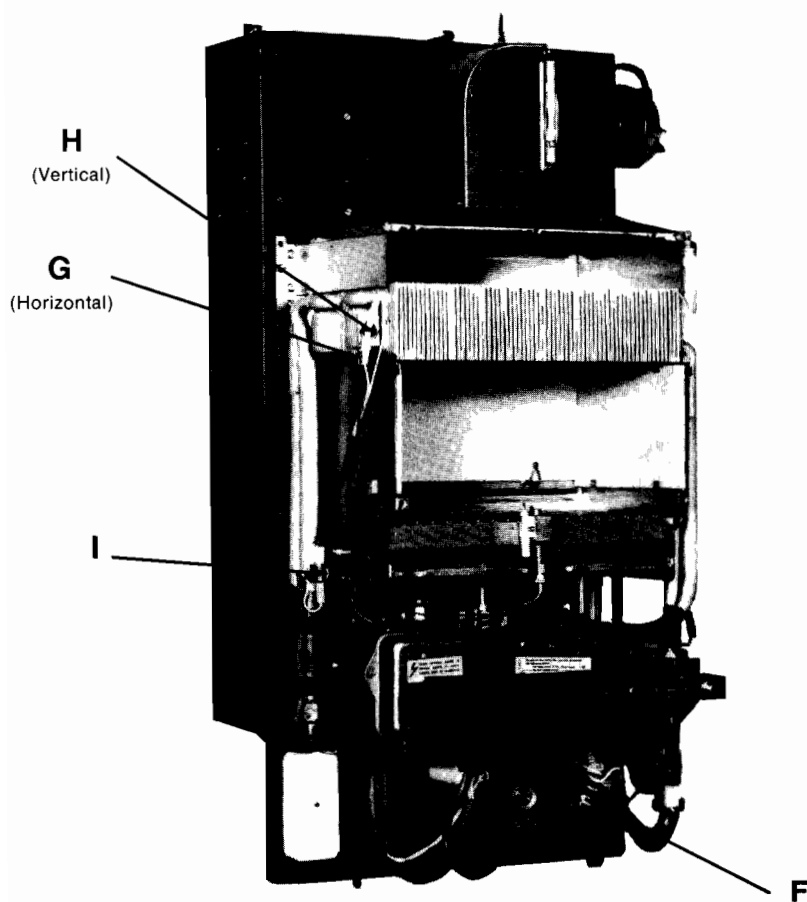


Fig. 28

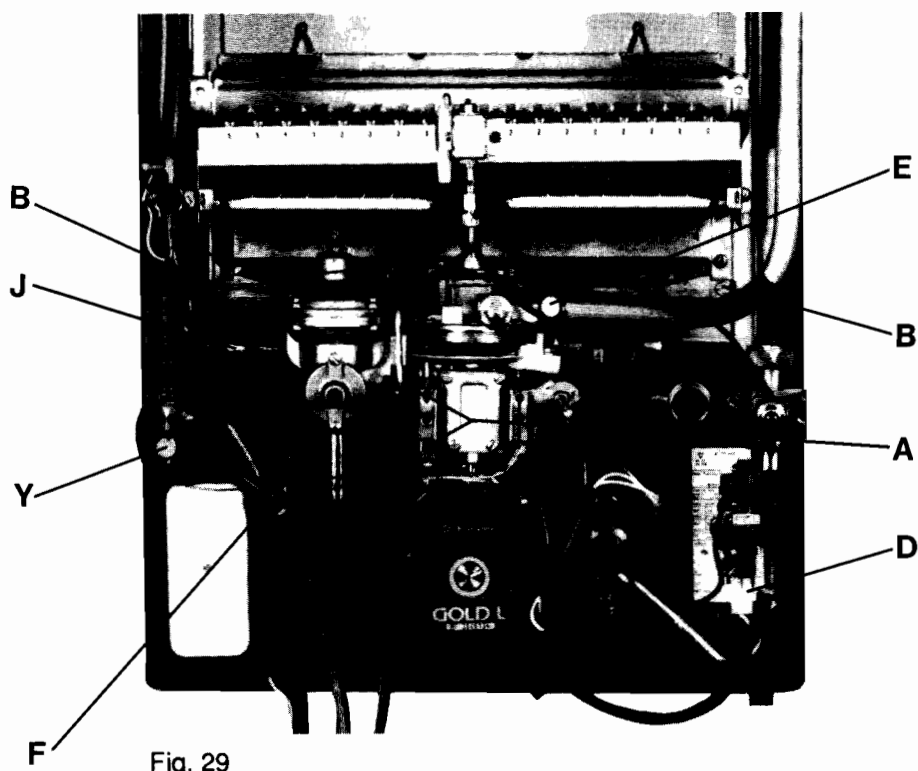


Fig. 29

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**OVERHEAT STAT**

---

To replace the main overheat stat G (Fig. 28) :

- 17. 1. Unscrew the 2 screws fixing the 2 wires
- 17. 2. Unscrew the 2 screws fixing the overheat stat, remove.

To replace the C.H. overheat stat F (Fig. 28)

- 17. 3. Unscrew the 2 screws fixing the 2 wires
- 17. 4. Unscrew the 2 fixing screws of the overheat stat, remove.

---

**LIMIT STAT**

---

To replace the C.H. limit stat H (Fig. 28)

- 17. 5. Disconnect the 2 wires of the limit stat
- 17. 6. Remove the 2 fixing screws, remove the limit stat.

To replace the D.H.W. limit stat I (Fig. 28) :

- 17. 7. Disconnect the 2 wires of the limit stat.
- 17. 8. Remove the 2 fixing screws, remove the limit stat.

---

**Section 18 : To remove the gas control assembly (Fig. 29)**

---

- 18. 1. Isolate the flow and return of the central heating system.
- 18. 2. Isolate the water supply.
- 18. 3. Isolate the gas supply by the gas cock.
- 18. 4. Remove the control box as described in section 4.
- 18. 5. Remove the pump as described in section 11.
- 18. 6. Remove wire from solenoid, noting its position, as described in section 9.
- 18. 7. Disconnect the flow safety valve wires D.
- 18. 8. Undo the 2 nuts E on the water valve.
- 18. 9. Undo the nut F directly under the main gas valve.
- 18.10. Undo the union J on the heat exchanger.
- 18.11. Remove the 4 fixing screws A on the back of the modulating box assembly G.
- 18.12. Disconnect the thermocouple nut from the main gas valve as described in Section 6.7.
- 18.13. Undo the nut Y and remove D.H.W. phial from the heat exchanger.
- 18.14. Remove the front panel as described in section 2.
- 18.15. Remove the air stray as described in Section 3.
- 18.16. Support the weight of the assembly and remove the 2 screws B on the main burner manifold.

Access is now available to replace the different parts on this assembly (gas governor, modulating valve assembly, main gas valve, water valve).

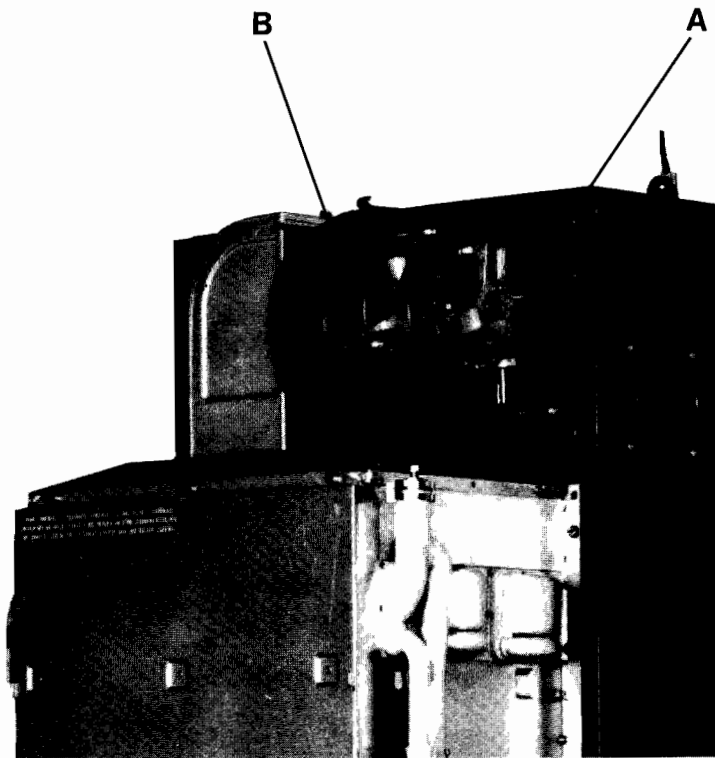


Fig. 30

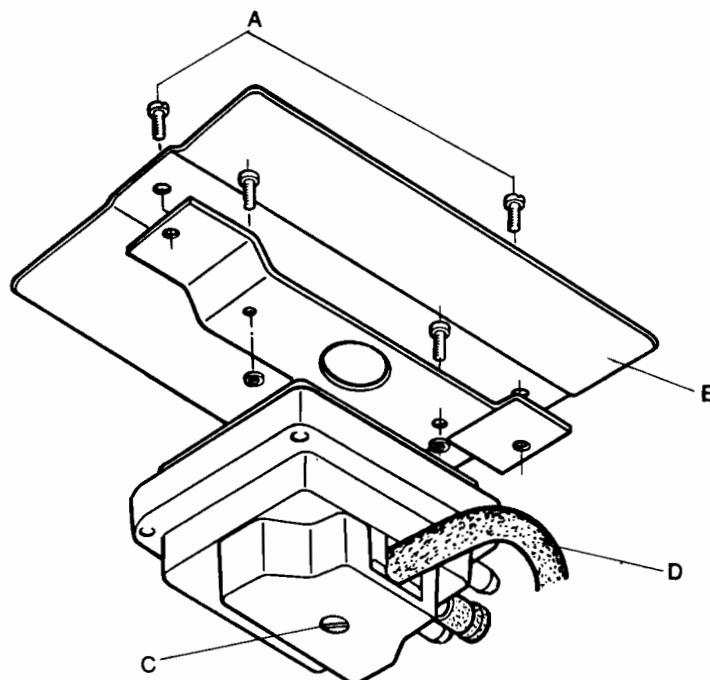


Fig. 31



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**Section 19 : electrical control box components**

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Should there be any problem with the electrical control box components, the complete control box has to be changed and the faulty box sent to elm leblanc for repairs.

---

**Section 20 : to replace the fan Fig 30**

---

20. 1. Gain general access as described in section 1.
20. 2. Disconnect the plug A of the fan on the top of the boiler.
20. 3. Remove the screw B.
20. 4. Remove the fan by pulling off.

---

**Section 21 : to replace the air pressure switch (Fig 31)**

---

21. 1. Unscrew the 2 screws A on the top of the boiler.
21. 2. Take off the cover B.
21. 3. Disconnect the 2 pipes bb pulling off the pressure-switch.
21. 4. Take off the pressure-switch.
21. 5. Unscrew the screw C of the pressure-switch cover.
21. 6. Disconnect the wires D and replace if necessary.

---

**Section 22 : to repressurise the Expansion vessel (Fig. 32)**

---

22. 1. Isolate the flow and return of the Central Heating System as described in Section 12.2.
22. 2. Empty the water of the boiler by pushing on the safety valve (N Fig. 21).
22. 3. Unscrew the 2 screws A Fig. 32 of the round plate, on the left side of the fan (on the back frame).
22. 4. Access is now available to the expansion vessel valve.
22. 5. Remove the valve cap.
22. 6. Repressurise the expansion vessel with an air pump to 0.5 bar minimum.

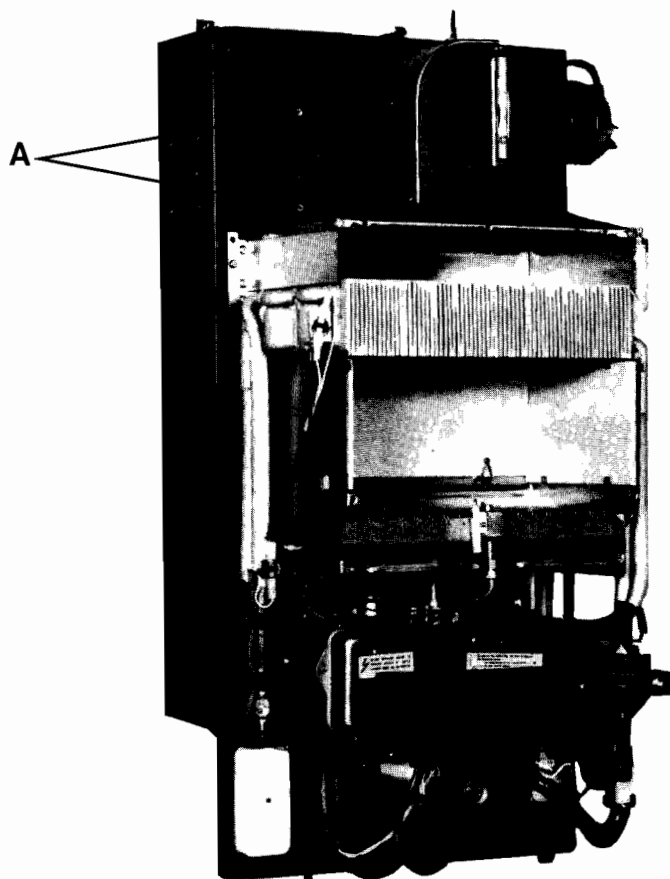
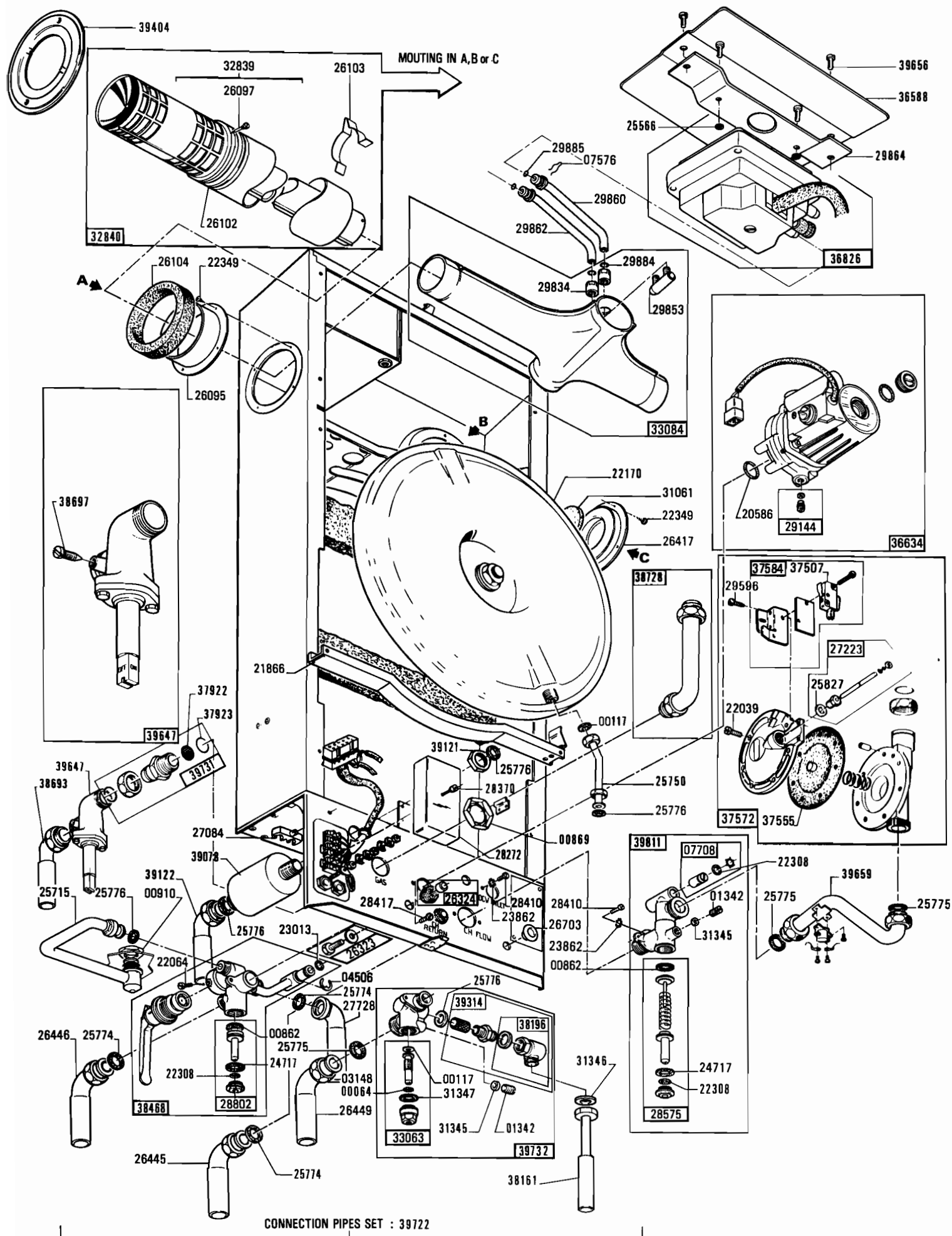


Fig. 32

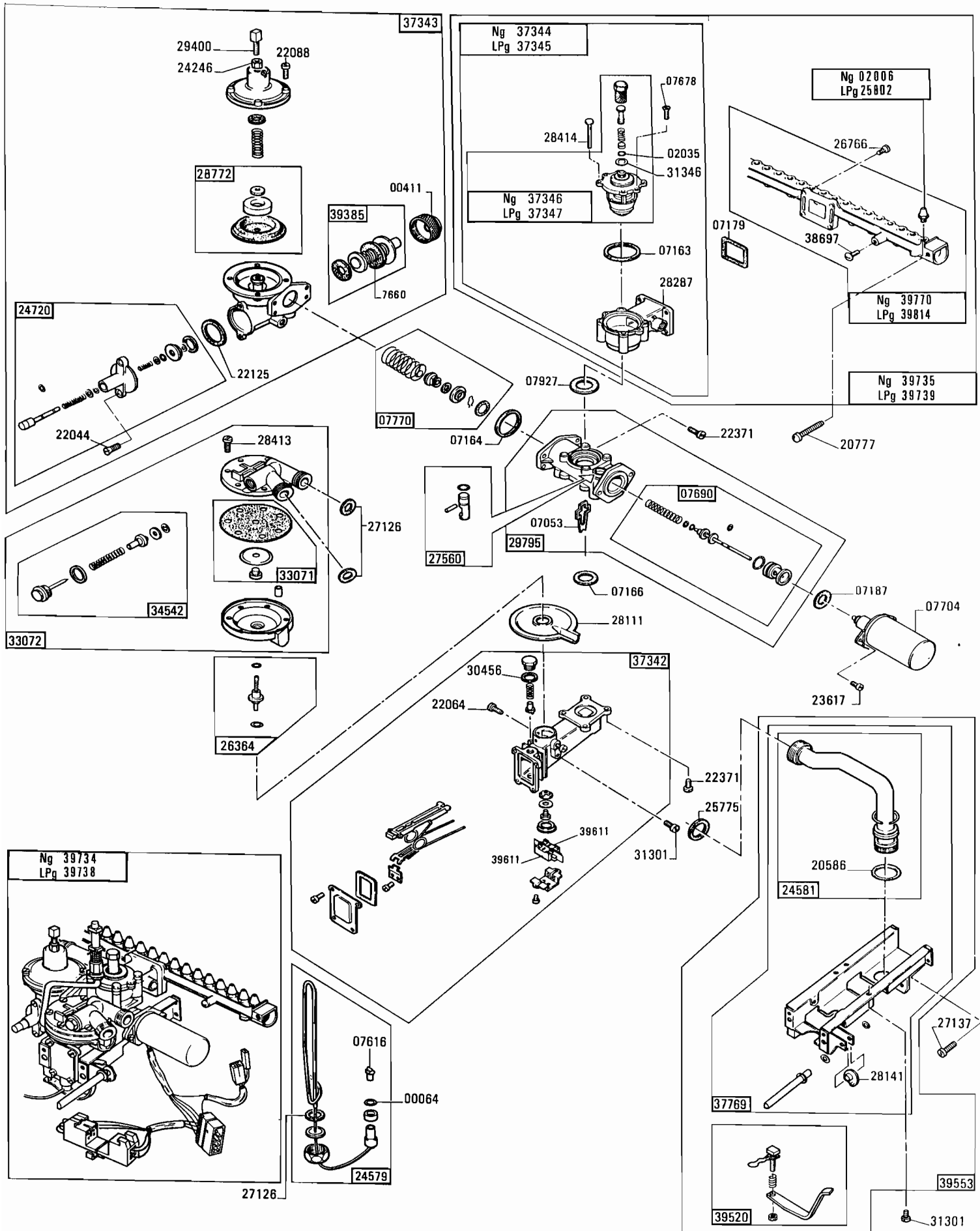
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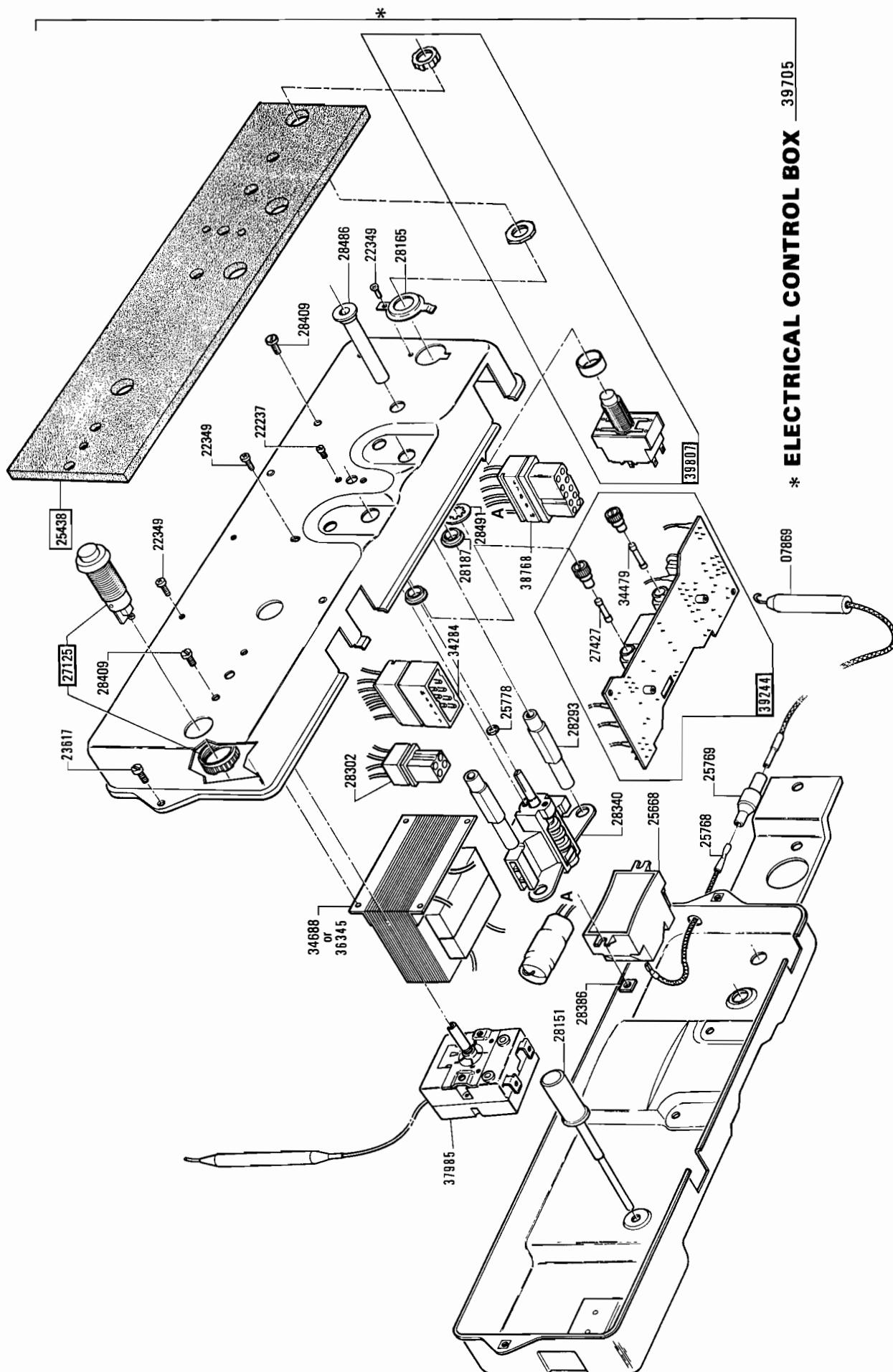
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C.H. Over heat stat 90°C	20705	
Circulating pump	36634	
D.H.W diaphragm	33071	
D.H.W over heat stat 85°C	27339	
D.H.W plastic piston	34542	
D.H.W push rod spindle	26364	
Domestic hot water thermostat	24579	
Electrical control box	39705	
Fan	08863	
Fuse 0.250 A	34479	
Fuse 3 A	27427	
Gas pilot nat gas with injector	39518	
Heat exchanger	39772	
Magnetic head	39385	
Main burner	39769	
Over heat stat T.C device (C.H. flow pipe 95°C)	39768	
Over heat stat T.C device (Heat exchanger 120°C)	38239	
Piezo unit push button	39807	
Pressure switch	36826	
Solenoid valve	07704	
Spark electrode	07869	
Thermocouple	39716	
Thermomanometer (gauge)	07004	
Water valve microswitch assembly	39611	



## BACK FRAME ASSEMBLY

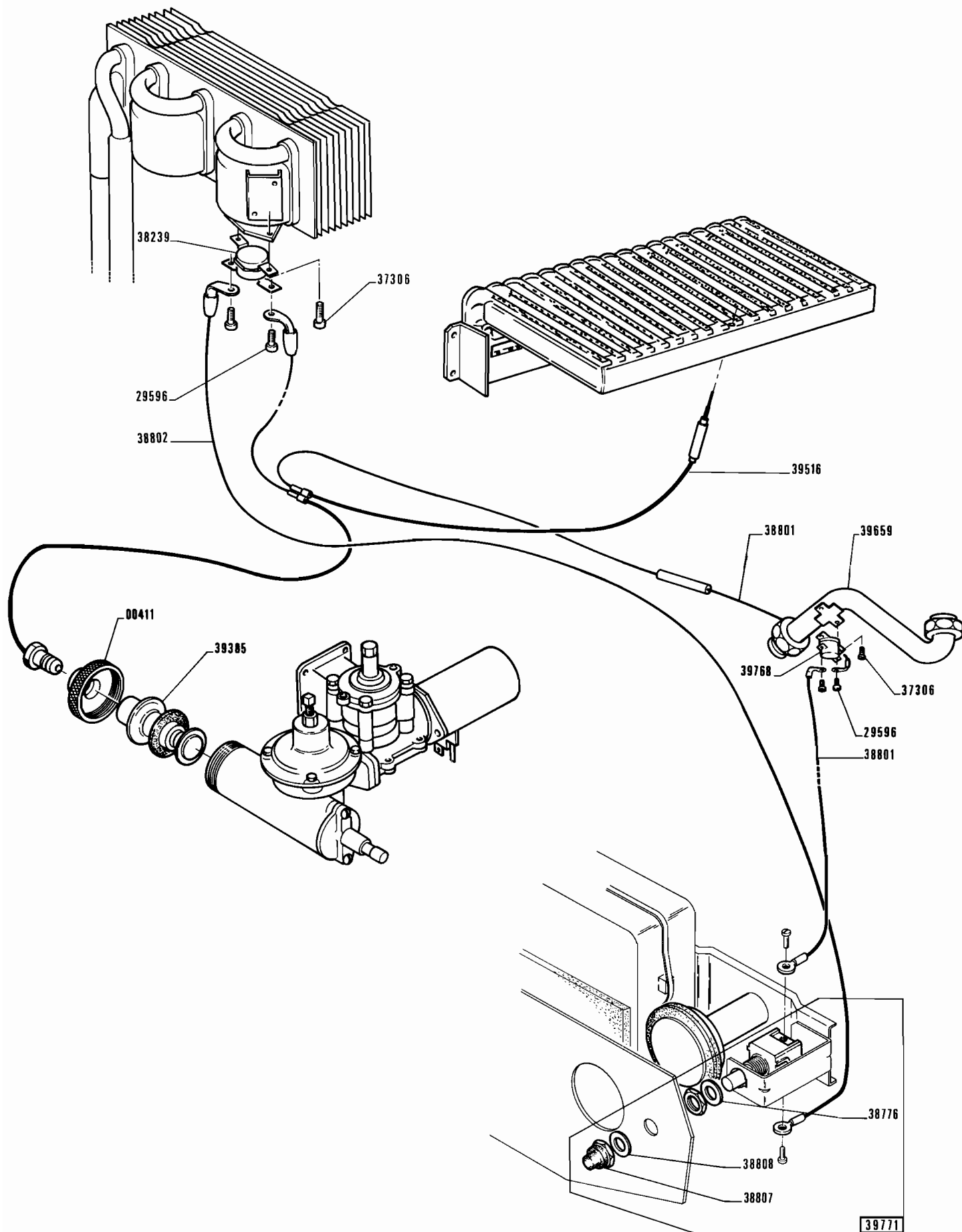


**GAS AND WATER VALVE ASSEMBLY**

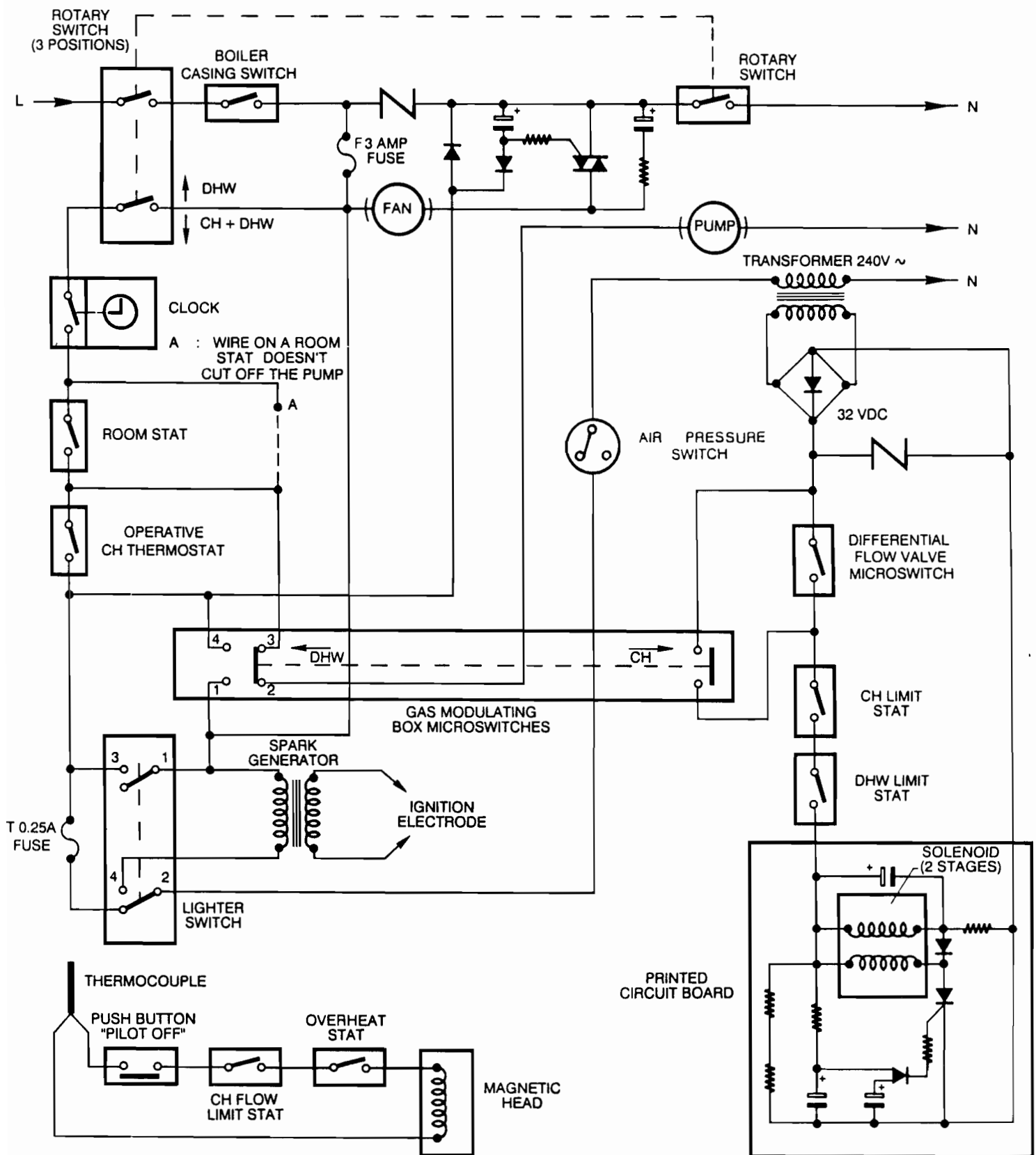


\* **ELECTRICAL CONTROL BOX** 39705

## ELECTRICAL CONTROL BOX ASSEMBLY

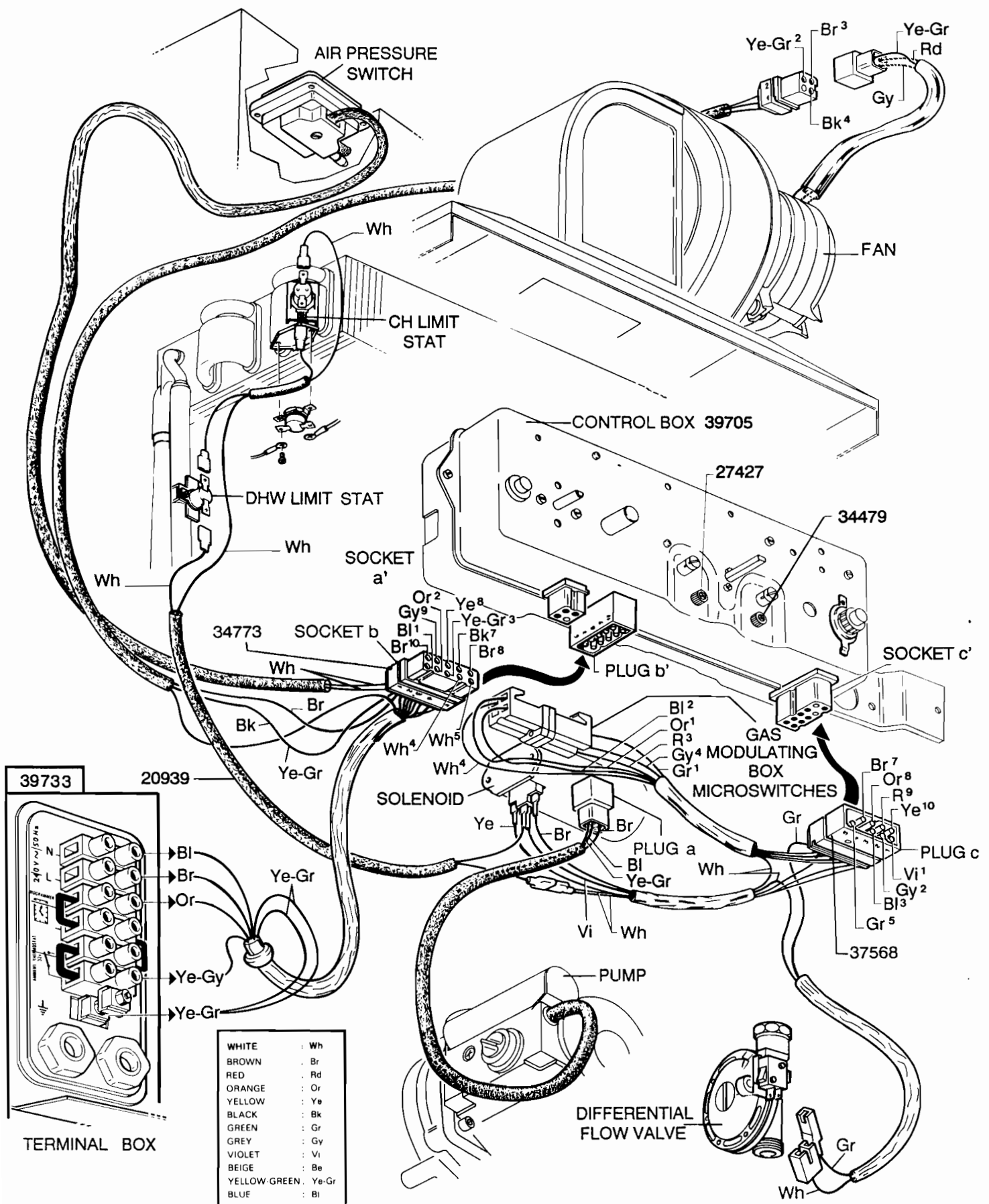


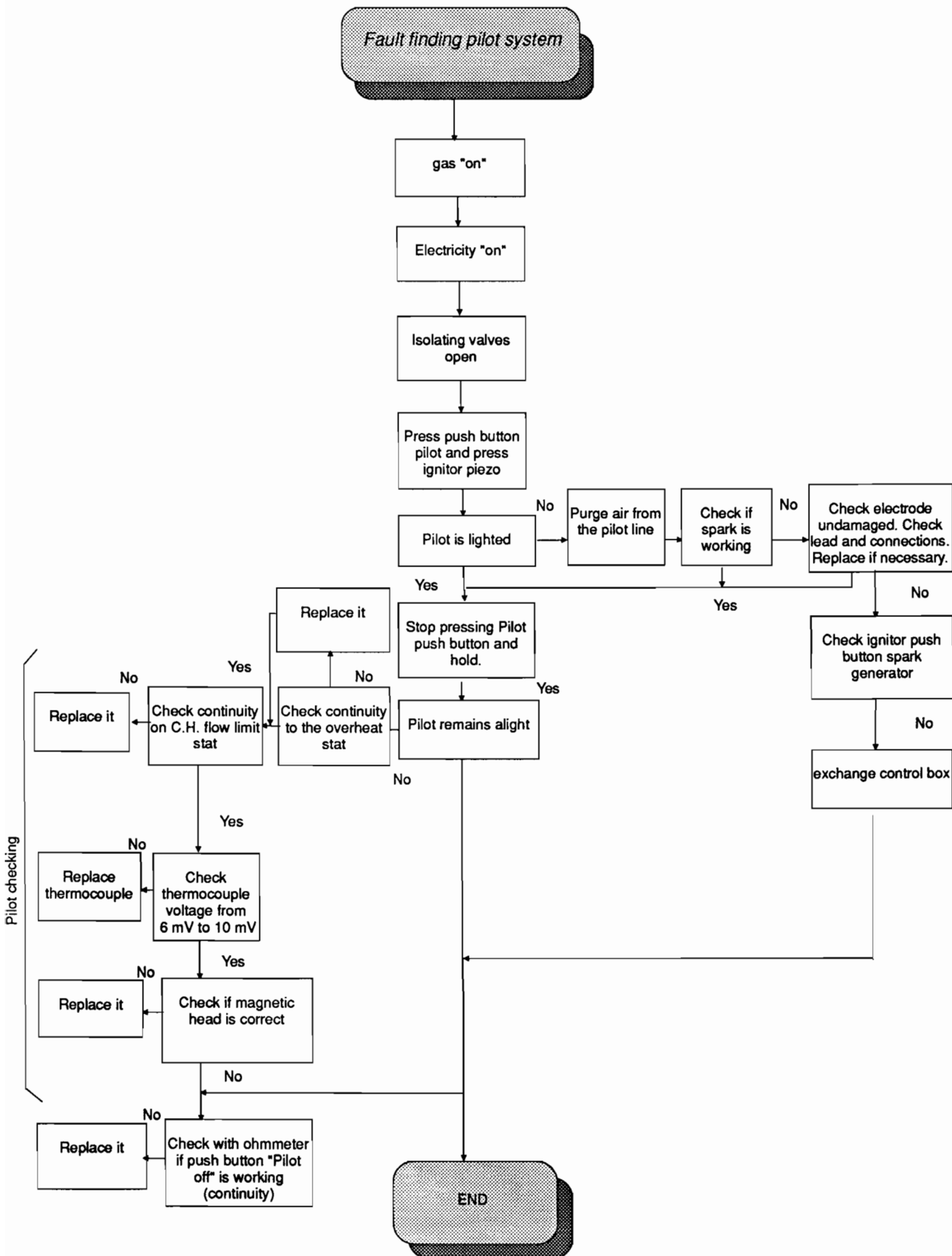
### CUT OFF GAS SAFETY DEVICE



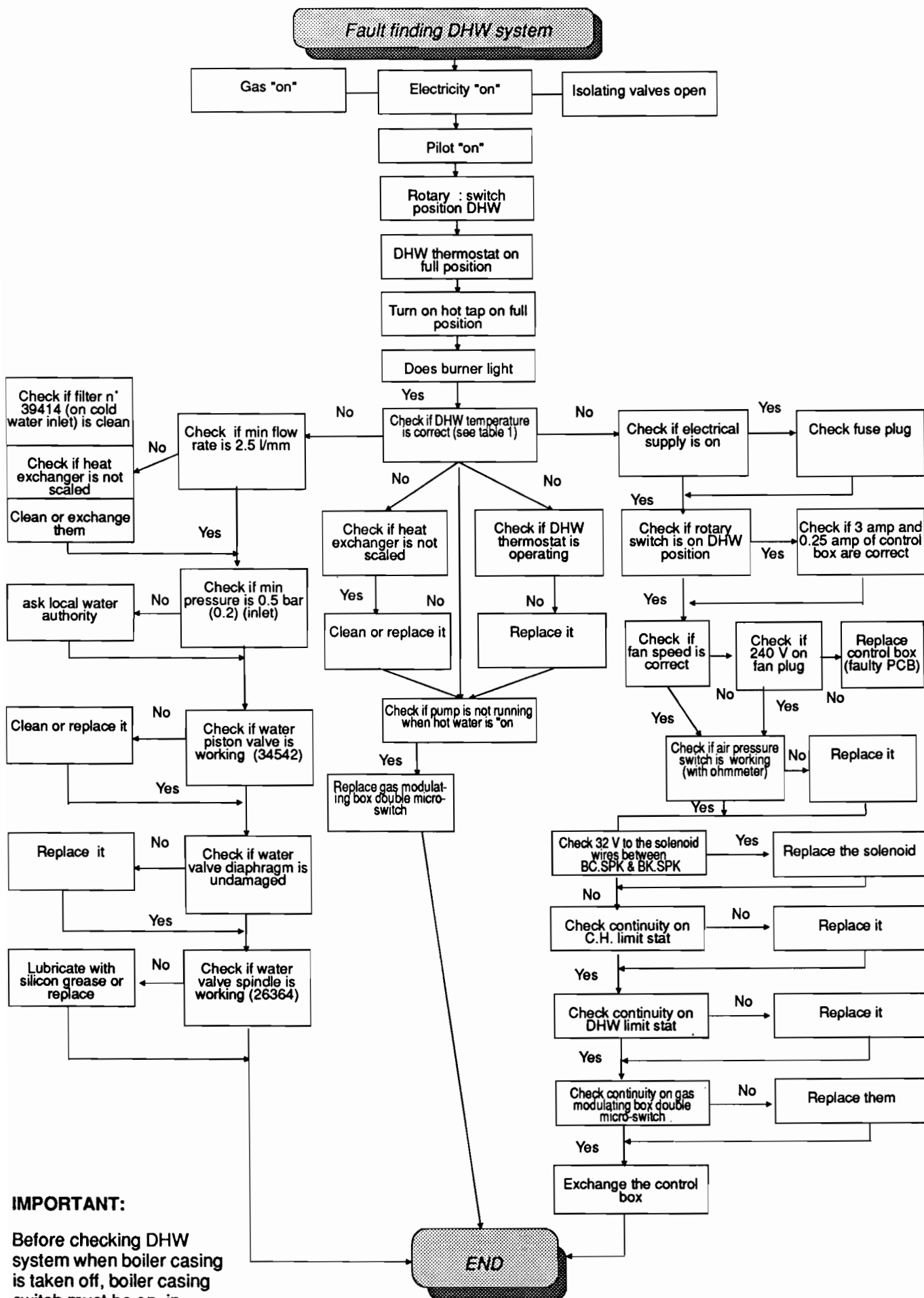
FUNCTIONAL FLOW DIAGRAM

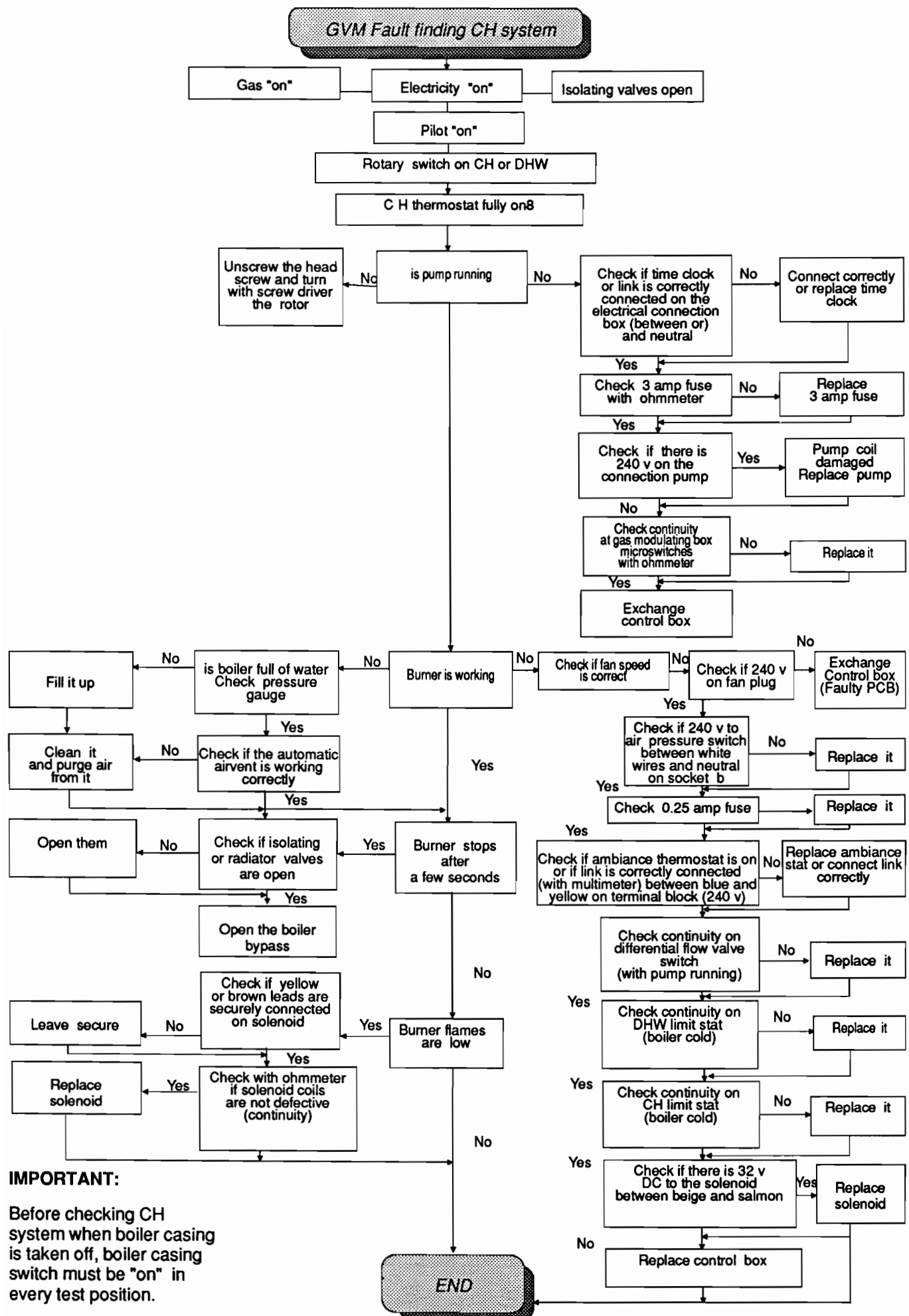


**ILLUSTRATED WIRING DIAGRAM**

**IMPORTANT**

Before checking Pilot System, when boiler casing is taken off, boiler casing switch must be "on" in every test position





PROBLEM	CAUSE	TEST	REMEDY
<b>I - PILOT</b>			
Pilot doesn't light	<ul style="list-style-type: none"> <li>- Gas cock is off</li> <li>- Gas pilot line is full of air</li> <li>- Pilot filter is blocked by dust</li> <li>- Bad electrode position</li> <li>- Spark electrode lead is cut</li> <li>- Igniter unit button doesn't work</li> </ul>		<ul style="list-style-type: none"> <li>- Open it</li> <li>- Purge it</li> <li>- Replace it</li> <li>- Adjust it (4.0 ad 4.5 mm between thermocouple and electrode).</li> <li>- Replace it</li> <li>- Replace it</li> </ul>
Pilot doesn't remain alight	<ul style="list-style-type: none"> <li>- Faulty thermocouple</li> <li>- Overheat stat is off</li> <li>- CH flow limit stat is off</li> <li>- Faulty magnetic head</li> <li>- Faulty "Pilot off" switch</li> </ul>	<ul style="list-style-type: none"> <li>- Measure with voltmeter if there is between 6 and 13 mV (on thermocouple)</li> <li>- when boiler is less than 110°C temp. with a ohmmeter, check continuity</li> <li>- On CH pipe flow, when temperature is less 90°C, check continuity of CH limit stat</li> <li>- Disconnect thermocouple from magnetic head. Take voltage (between 5 and 8.5 mv) 5 and 8.5 mv</li> <li>- Check it with ohmmeter</li> </ul>	<ul style="list-style-type: none"> <li>- Replace it</li> <li>- If not, replace it</li> <li>- If yes replace magnetic head</li> <li>- if defective, replace it</li> </ul>
Burner doesn't light (on every position - CH and DHW)	<ul style="list-style-type: none"> <li>- Fan is working with low speed</li> <li>- Air pressure switch defective</li> <li>- Faulty fan</li> </ul>	<ul style="list-style-type: none"> <li>- Check if 240 volts to the fan plug</li> <li>- Disconnect wires from air pressure switch and check it with ohmmeter</li> <li>- Check it with ohmmeter</li> </ul>	<ul style="list-style-type: none"> <li>- if yes replace fan</li> <li>- if no replace control box (faulty printed circuit)</li> <li>- if defective replace it</li> <li>- if defective replace it</li> </ul>
<b>II Domestic Hot Water</b>			
No Hot water			
a) burner doesn't light	<ul style="list-style-type: none"> <li>- Plug fuse is faulty</li> <li>- Wrong electrical connexion</li> <li>- Rotary switch is off</li> <li>- 3 amp or 0.25 amp fuses faulty</li> <li>- Faulty rotary switch</li> <li>- Faulty DHW limit stat</li> <li>- Faulty CH limit stat</li> <li>- Faulty water valve microswitches</li> <li>- Faulty solenoid</li> <li>- Faulty control box (faulty components)</li> </ul>	<ul style="list-style-type: none"> <li>- Check it with ohmmeter</li> <li>- Check if lead and neutral are in good position (see drawing)</li> <li>- Check with ohmmeter</li> <li>- Turn it on DHW and CH position</li> <li>- CH thermostat on lower position open tap (fully)</li> <li>- Check it with ohmmeter (boiler temperature less 80°C)</li> <li>- Check it with ohmmeter (boiler temperature less 90°C)</li> <li>- turn on tap (fully position) rotary switch on DHW position</li> <li>- Take with multimeter, voltage to DHW limit stat.</li> <li>- open tape (fully position) rotactor switch on DHW</li> <li>- take voltage with multimeter between beige and salmon wires (32 volts)</li> <li>- open tape rotary switch on DHW</li> <li>- Take voltage with multimeter to the DHW limit stat</li> </ul>	<ul style="list-style-type: none"> <li>- replace it</li> <li>- eventually change positions</li> <li>- turn in DHW position</li> <li>- replace faulty fuse</li> <li>- if burner is working replace rotary switch</li> <li>- replace it</li> <li>- replace it</li> <li>- if no volt, replace double microswitch</li> <li>- if 32 volts, replace solenoid.</li> <li>- if no voltage replace control box</li> </ul>

PROBLEM	CAUSE	TEST	REMEDY
<b>III - DHW (General problem)</b>	<ul style="list-style-type: none"> <li>- Insufficient debit of water</li> <li>a) filter (of cold water inlet connection) is obstructed</li> <li>b) Heat exchanger is fur by seale</li> <li>- Insufficient pressure</li> <li>- Water valve piston is not working correctly</li> <li>- Water valve diaphragm is damaged</li> <li>- Water valve spindle is faulty</li> </ul>	<ul style="list-style-type: none"> <li>- take if there is minimum of 2.5 l/min</li> <li>- Disconnect the safety domestic water pressure valve and check the filter.</li> <li>- Check if hot water flow tap is fully open, adjust DHW thermostat on 8, take the hot water temperature, (minimum debit 2.5 l/min - normal temperature is 65°C)</li> <li>- Take the cold water pressure minimum 0.5 bar</li> <li>- Disconnect control box, undo the nut located in front of the water valve, check piston</li> <li>- Unscrew the seven water screws valve, open it and check diaphragm</li> <li>- Check if you hear a "dic" when tap is opening</li> </ul>	<ul style="list-style-type: none"> <li>- Turn tap on fully position</li> <li>- Clean or exchange the filter</li> <li>- Descale heat exchanger</li> <li>- Contact Water Authority</li> <li>- clean or replace piston water valve</li> <li>- exchange diaphragm</li> <li>- remove spindle, lubricate with silicon grease or replace</li> </ul>
<b>IV DHW Temperature is not correct</b>	<ul style="list-style-type: none"> <li>- Heat exchanger fur by scale</li> <li>- Double microswitch water valve closed circuit in the same time as the simple microswitch</li> <li>- DHW thermostat is faulty</li> <li>- Low flame on the burner</li> <li>a) yellow or brown lead not securely connected to solenoid valve</li> <li>b) one solenoid coil is faulty</li> </ul>	<ul style="list-style-type: none"> <li>- See IIb</li> <li>- Pump is running when hot water is on</li> <li>- Take temperature of hot water with DHW thermostat on 8. Normal Normal temperature will be between 60 and 65°C (with 15°C of cold water inlet temperature)</li> <li>- check connections</li> <li>- check each coil with ohmmeter</li> </ul>	<ul style="list-style-type: none"> <li>- Descale it</li> <li>- Replace double microswitch</li> <li>- Replace DHW thermostat</li> <li>- leave secure</li> <li>- if defective replace solenoid.</li> </ul>

PROBLEM	CAUSE	TEST	REMEDY
<b>I - Boiler doesn't work</b> (No pump - No burner lighted)	<ul style="list-style-type: none"> <li>- No electrical supply</li> <li>- Bad contact on strap of time clock and room thermostat</li> <li>- 3 amp fuse is faulty</li> <li>- Rotactor switch is faulty</li> <li>- Pump blocked</li> <li>- Single water valve switch is faulty.</li> <li>- Faulty fan or faulty air pressure switch (see paragraph I - Pilot)</li> </ul>	<ul style="list-style-type: none"> <li>- check between L and N of terminal block if there is 240 V with multimeter</li> <li>- check between orange and N on the terminal block if 240 V.</li> <li>- check with ohmmeter fuse 3 amp</li> <li>- check between N and grey on terminal block if there is 240 V.</li> <li>- check between neutral and leave connection pump if there is 240V.</li> </ul>	<ul style="list-style-type: none"> <li>- replace the plug fuse</li> <li>- secure correctly the strap or connect correctly time clock</li> <li>- replace 3 amp fuse</li> <li>- replace rotactor switch</li> <li>- Unscrew and take off the main screw on the pump head. Turn clockwise the rotor.</li> <li>- replace the single microswitch water valve.</li> </ul>
<b>II - Pump is working but no flames to the main burner</b>	<ul style="list-style-type: none"> <li>- Boiler not completely full of water</li> <li>- Water flow security valve is not working</li> <li>- " "</li> <li>- Faulty 0.25 amp fuse</li> <li>- Faulty microswitch of water flow security valve</li> <li>- Faulty DHW limit stat</li> <li>- Faulty CH limit stat</li> <li>- Faulty solenoid</li> </ul>	<ul style="list-style-type: none"> <li>- Check on pressure gauge and check the automatic airvent</li> <li>- when boiler requests heat, micro-switch must be on.</li> <li>- check diaphragm</li> <li>- check it with ohmmeter (boiler off)</li> <li>- check with ohmmeter</li> <li>- when boiler is cold (less 80°C) check it with ohmmeter</li> <li>- when boiler is cold (less 90°C) check it with ohmmeter</li> <li>- check 32 volts to the solenoid wire (between beige and salmon)</li> <li>- " "</li> </ul>	<ul style="list-style-type: none"> <li>- purge central heating circuit boiler and fill at minimum 1bar pressure</li> <li>- open isolating valve</li> <li>- open every radiator valves</li> <li>- open boiler by pass</li> <li>- replace it if needed</li> <li>- replace it</li> <li>- replace it</li> <li>- replace it</li> <li>- if yes replace solenoid</li> <li>- if no replace control box</li> </ul>
<b>III - Burner is working with low flames</b>	<ul style="list-style-type: none"> <li>- Bad connexion to the solenoid</li> <li>- Faulty control box (components) wire</li> <li>- Second solenoid coil is faulty</li> </ul>	<ul style="list-style-type: none"> <li>- Check if yellow or brown lead are securely connected</li> <li>- Check if 32 volts to the solenoid wire</li> <li>- Check solenoid with ohmmeter</li> </ul>	<ul style="list-style-type: none"> <li>- connect correctly</li> <li>- If not, replace control box</li> <li>- Exchange solenoid</li> </ul>
<b>IV - General</b> <b>Boiler very noisy</b>  3 A fuse blows continually  0.25 fuse blows continually  Hot water only when boiler is in C.H. and DHW position Bad combustion	<ul style="list-style-type: none"> <li>- Poor fixing to wall</li> <li>- Air in the boiler</li> <li>- Pump speed too high</li> <li>- Bad balance of the fan</li> <li>- Printed circuit or transformer of control box shorting</li> <li>- Short circuit on 32 volts transformer</li> <li>- Points of microswitch fused together (under water valve)</li> <li>- Bad installation of the flue or flue blocked</li> </ul>	<ul style="list-style-type: none"> <li>- Check transformer with ohmmeter</li> <li>- check with ohmmeter</li> <li>- check if terminal, and every tube are not blocked by cement etc...</li> </ul>	<ul style="list-style-type: none"> <li>- Refix boiler to wall and leave secure</li> <li>- Purge air from the head pump screw automatic air-vent and radiators</li> <li>- Variator pump on lower speed</li> <li>- replace it</li> <li>- Replace control box</li> <li>- Replace control box</li> <li>- replace if necessary (need to remove pump)</li> <li>- dismantel them and install them correctly.</li> </ul>

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